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## CONTENTS.

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**THE LUMLEIAN LECTURES** (Abstract of) on Acute Poliomyelitis. Delivered before the Royal College of Physicians of London on March 30th, and April 4th and 6th, 1916, by FREDERICK E. BATTEN, M.D. Camb., F.R.C.P. Lond. ..... 809

**ORIGINAL ARTICLES.**

A Note on the Importance of Auscultation in the Diagnosis of the Vascular Injuries Accompanying Gunshot Wounds. By SURG.-GEN. SIR GEORGE MAKINS, K.C.M.G., C.B., F.R.C.S. Eng. 812

Shock and the Soldier. By G. ELLIOT SMITH, M.A., M.D. Sydney and Adelaide, F.R.C.P. Lond., F.R.S.—(*To be concluded*) ..... 813

A Standard Method of Testing Antiseptics for Wounds, with Some Results. By W. D'ESTE EMERY, M.D. Lond., M.R.C.S. Eng., L.R.C.P. Lond. ..... 817

The Treatment of Hæmorrhoids by Injection. By F. SWINFORD EDWARDS, F.R.C.S. Eng. 819

Methods of Preparing Sphagnum Moss as a Surgical Dressing. By CHARLES W. CATHCART, F.R.C.S.—(*Illustrated*) ..... 820

A Note on the Precipitin Reaction in Tuberculous Fluids. By S. ROODHOUSE GLOYNE, M.D. Leeds, D.P.H. 823

**CLINICAL NOTES:**

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

Imperforate Hymen in a Baby: A Note for Practisers of Midwifery. By HERBERT R. SPENCER, M.D., B.S. Lond., F.R.C.P. Lond.—(*Illustrated*) 823

A Case of Imperforate Hymen. By WILLIAM ROBERTSON, M.D. Glasg. ..... 823

**MEDICAL SOCIETIES.**

ROYAL SOCIETY OF MEDICINE: SECTION OF PSYCHIATRY:—The Psychology of Rumour 824

ÆSCULAPIAN SOCIETY ..... 824

**REVIEWS AND NOTICES OF BOOKS.**

The Positive Sciences of the Ancient Hindus. By Brajendranath Seal, M.A., Ph.D. ..... 825

A Handbook of Medical Diagnosis for the Use of Practitioners and Students. By J. C. Wilson, A.M., M.D. Fourth edition ..... 825

**LEADING ARTICLES.**

THE WITTENBERG CAMP ..... 827

CREDULITY IN WAR TIME ..... 827

**ANNOTATIONS.**

Acute Poliomyelitis ..... 829

The Diagnosis Between Powder Embedded in the Skin and Lead Particles ..... 829

Compulsory Treatment of Venereal Disease ..... 829

The Value of Scientific Dentistry ..... 830

The Conservation of Infant Life in Scotland ..... 830

Poisoning by Daffodil Bulbs ..... 830

Infantile Syphilis: an Analysis of 100 Cases ..... 831

A Dietetic View of the Tax on Aerated Waters ..... 831

The Army Medical Civilian Reserve ..... 831

The Influence of Cold upon the Trichinous Larvæ ..... 832

**SPECIAL ARTICLES.**

A Monthly Record of Atmospheric Pollution. — Committee for the Investigation of Atmospheric Pollution: Summary of Reports for Month ending Oct. 31st, 1915 826

Atmospheric Pollution in Sheffield ..... 826

Report of the County Medical Officer of Health and School Medical Officer of London for 1914.—(*To be concluded*) ... 833

The Services ..... 834

VITAL STATISTICS:

Health of English Towns ..... 835

Health of Scotch Towns ..... 835

Health of Irish Towns ..... 835

**CORRESPONDENCE.**

The Prevention of Bilharzia Infection (Dr. F. G. Cawston) 837

The Operative Treatment of Osteo-arthritis (Dr. W. I. de C. Wheeler) ..... 838

Anæsthesia for Enucleation of Tonsils (Dr. Hugh R. Phillips) 838

The Droitwich Brine Baths (Mr. J. H. Hollyer) ..... 838

Enteric and Typhoid: a Point in Nomenclature (Dr. E. W. Goodall) ..... 838

Steel Helmets for the Army ..... 838

Different Names for Identical Substances (Messrs. Burroughs Wellcome & Co.) .. 838

Mr. H. G. Wells and Doctors (Dr. Robert R. Rentoul) ..... 847

**OBITUARY.**

Sir Thomas Boor Crosby, M.D. St. And., F.R.C.S. Eng., J.P., LL.D. St. And. & Dub., late Lord Mayor of London.—(*With Portrait*) ..... 836

Tom Bates, L.R.C.P. & S. Edin., M.R.C.S. Eng., Consulting Surgeon to the Worcester General Infirmary ..... 837

An Appreciation of the late Dr. Mary C. Murdoch ..... 837

**THE WAR.**

The Casualty List ..... 839

Deaths among the Sons of Medical Men ..... 839

Mentioned in Despatches ..... 839

Military Orthopædics ..... 839

Medical Notes from the Salonica Force.—(*Illustrated*) ..... 839

The Recruiting of Pharmaceutical Chemists ..... 842

Soldiers and Sailors Dental Aid Fund ..... 842

OBITUARY OF THE WAR:

John Temple Leon, M.D., B.Sc. Lond., M.R.C.S., L.R.C.P. Lond., D.P.H. Camb., Captain, R.A.M.C. (T.).—(*With Portrait*) ..... 842

Ronald Wingrave Duncan, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., L.D.S. R.C.S. Edin., Captain, R.A.M.C.—(*With Portrait*) 842

**MEDICAL NEWS.**

Tragic Death of a Medical Man ..... 812

Leicester Royal Infirmary ..... 812

Medical Magistrate for Torquay 813

Norfolk and Norwich Hospital .. 820

Asylum Workers' Association ... 823

Royal Victoria Hospital, Belfast 825

City of London Lying-in Hospital ..... 826

Royal Institution ..... 832

University of Oxford: Degree conferred ..... 843

Examining Board in England by the Royal Colleges of Physicians of London and Surgeons of England: Pass-list ..... 843

Royal College of Surgeons of England: Pass-list ..... 843

Society of Apothecaries of London: Pass list ..... 843

London School of Tropical Medicine: Pass-list ..... 843

University of Manchester: Pass-list ..... 843

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow: Pass-list ..... 843

University of Glasgow: Pass-list ..... 843

Typhoid Fever along the Shannon ..... 843

Royal Commission on University Education in Wales ..... 844

Petrol Consumption by Irish Medical Men ..... 844

**PARLIAMENTARY INTELLIGENCE.**

Notes on Current Topics: The Local Government (Emergency Provisions) Bill ..... 844

House of Commons ..... 844

Appointments ..... 845

Vacancies ..... 845

Births, Marriages, and Deaths .. 848

Notes, Short Comments, and Answers to Correspondents ... 848

Medical Diary ..... 847

Meteorological Readings ..... 847

Acknowledgment of Communications received ..... 848

**FOR INDEX TO ADVERTISEMENTS SEE PAGE 2.**

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# INDEX

## MEDICAL AND OTHER BOOKS AND PUBLICATIONS


PAGE

**BAILLIERE, TINDALL & COX:—**
Bigg—Indigestion 4
„ War Diseases 4
Clarke, E.—Errors of Accommodation and Refraction of the Eye Cover 1
Freyer—Enlargement of the Prostate 6
Freyer—Surgical Diseases of the Urinary Organs 8
Heath—Aural Suppuration Cover 1
Mummery—Diseases of the Coronary and their Surgical Treatment Cover 1
Thorne—Nauheim Treatment of Diseases of the Heart and Circulation in England Cover 1

**BALE, SONS & DANIELSSON:—**
Cochrane & Sprawson—A Guide to the Use of Tuberculin 1
Defective Children 1
Disturbances of Visual Functions 1
Moullin—When to Operate in Inflammation of Appendix Cover 1

**CASSELL & CO.:—**
Berkeley & Bonney—Gynæcological Surgery 7
Bramwell—Hypnotism and Treatment by Suggestion 7
Burton-Fanning—Open Air Treatment of Pulmonary Tuberculosis 7
Gould, Sir A. P.—Elements of Surgical Diagnosis 7

PAGE

**CASSELL & CO.—(Continued.)**
Harris—Electrical Treatment 7
Herman—Difficult Labour 7
Morris, Sir Malcolm—Diseases of the Skin 7
Thomson, Sir St. Clair—Diseases of the Nose and Throat 7
Thomson, H. C.—Diseases of the Nervous System 7
Treves, Sir F.—Surgical Applied Anatomy 7
Treves, Sir F., & Hutchinson,—Student's Handbook of Surgical Operations 7

**CHURCHILL, J. & A.:—**
Fenwick—Cancer and Tumours Cover 1
„ Ulcer and its Consequences Cover 1
Hare—Alcoholism: Its Clinical Aspects and Treatment Cover 1

**FROWDE AND HODDER & STOUGHTON:—**
McCann—Cancer of Womb Cover 1

**GRIFFIN & CO.:—**
West—Diseases of the Organs of Respiration 6

**HARRISON & SONS:—**
McDonagh—Link in a Chain of Research on Syphilis Cover 1

PAGE

**HILTON & CO.:—**
Ghosh & Das—Hygiene and Public Health 4

**KIMPTON:—**
Roth—Notes on Military Orthopædics Cover 1

**LEWIS & CO.:—**
Moullin—Enlargement of Prostate Cover 1
Powell, Sir R. D., & Hartley—On Diseases of Lungs, &c. Cover 1

**LONGMANS, GREEN & CO.:—**
Bainbridge & Menzies—Essentials of Physiology 3
Bayliss—Principles of General Physiology 3
Besson—Practical Bacteriology, Microbiology, & Serum Therapy 3
Cheyne, Sir W. W., & Burghard—Manual of Surgical Treatment 3
Gaskell—Involuntary Nervous System 3
Herschell—Chronic Colitis 3
Plimmer—Practical Organic and Bio-Chemistry 3
Stevenson—Wounds in War 3

**MACMILLAN & CO.:—**
Herms—Medical and Veterinary Entomology 6

**MEDICAL PUBLISHING CO.:—**
Lane, Sir A.—Operative Treatment of Fractures Cover 1

PAGE

**MILLS & BOON:—**
Ash—Stammering, &c. Cover i
„ Mental Self-Help „ i

**MURRAY:—**
Brunton, Sir L.—Therapeutics of the Circulation 4

**SAUNDERS COMPANY:—**
Allen—Local Anæsthesia 5
Keen—Surgery 5
Keen's Surgery Cover i
Whiting—Bandaging 5

**THACKER & CO.:—**
Lukis, Sir P., & Blackham—Tropical Hygiene 4

**UNIVERSITY OF LONDON PRESS:**
Cole—Mental Diseases 4
Stevens—Diseases of Women 4
Wright, Col. Sir A.—Wound Infections 4

**WRIGHT & SONS (BRISTOL):—**
Index of Treatment 4

**MEDICAL LIBRARIES, &c.:—**
Baker—Books 6
Rehnke—Stammering, &c. 6
Evans Sons Lescher & Webb—Evans' Journal 6
Kenley—Stammering 6
Matthews—Wood: Application of Trusses to Hernia 6
Squire's Pocket Companion Cover 1


## OFFICIAL AND GENERAL ANNOUNCEMENTS


**HOSPITAL, INFIRMARY, SANATORIUM, &c., VACANCIES** 47-49

**ASSISTANCIES, MEDICAL** 49, 50

**ASYLUMS, HOMES, &c.:—**
Abbotswood House, Cinderford 45
Ashwood House, Kingswinford 47
Balmoral Nursing Home, Liverpool 41
Barnwood House Hospital 43
Bishopstone House, Bedford 42
Brunton House, Lancaster 42
Camberwell House, Peckham-road 44
Capel Lodge Retreat and Sanatorium, near Folkestone 45
Cheadle Royal 43
Clarence House, North Finchley 47
Clarence Lodge, Clapham Park 47
Colthurst House School, Alderley Edge 42
Coppice, The, Nottingham 45
Dairymple House, Rickmansworth 45
David Lewis Colony, Alderley Edge 42
Duff House, Banff 46
Edgar Allen Institute, Sheffield 48
General Manager, Craven-street 47
Ghyllwoods 45
Grove House, Church Stretton 43
Grove, The, Catton, Norwich 45
Haslemere Nursing Home 47
Haydock Lodge, Newton-le-Willows 44
Heigham Hall, Norwich 43
Home for Epileptics, Maghull 42
Invernith Sanatorium, Colinsburgh 45

**ASYLUMS—(Continued).**
Littleton Hall, Brentwood 47
London Fever Hospital 43
Malling Place, Kent 43
Melbourne House, Leicester 44
Mendip Hills Sanatorium 46
Moat House, Tamworth 44
Newmains Retreat, Lanarkshire 45
New Saughton Hall, Polton, Midlothian 44
Nordrach-on-Dee, Banchory 46
Northumberland House, Finsbury Park 44
Northwoods House, Winterbourne 41
No. 381, L.O., Strand 47
No. 412, L.O., Strand 47
Otto House, West Kensington 42
Peckham House 45
Pendyffryn Hall Sanatorium, Nordrach-in-Wales 45
Plympton House, Plympton 43
Portsmouth Corporation Mental Hospital 47
Royal Earlswood Institution for Mental Defectives 44
St. Andrew's Hospital, Dollis Hill 47
St. Andrew's Hos., Northampton 45
St. George's Retreat, Burgess Hill 42
St. Luke's Hospital for Mental Diseases 47
Springfield House Private Asylum, Bedford 47
Stretton House, Church Stretton 45
The Grange, near Rotherham 44
Vale of Clwyd Sanatorium 46

**ASYLUMS—(Continued).**
Warneford Asylum, Oxford 47
Westcroft, Ilkley 47
Woodfield, Streatham 43
Wye House, Buxton 43

**HEALTH RESORTS, BATHS, &c.:—**
Alexandra Therapeutic Institute 46
Smedley's, Matlock 46

**HOUSE & ESTATE AGENTS** 51

**LIFE & FIRE ASSURANCES, &c.:—**
General Life Assurance Co. 40
Medical Sickness & Accident Soc. 25
National Provident Institution 40
Prudential 40

**MEDICAL ACCOUNTANTS, &c.** 50

**MEDICAL AGENTS** 51

**MEDICAL SCHOOLS:—**
(LONDON.)
Charing Cross Hosp. Med. School 39
London School of Clinical Med. 39
Middlesex Hosp. Medical School 40
St. Mary's Hospital Medical School 39
University of London, University College 39
West London Post-Graduate Coll. 39

**NURSES' ASSOCIATIONS:—**
Army and Navy Male Nurses Co-operation 42
Associated Male Nurses and Masseurs 40

**NURSES' ASSOC.—(Continued).**
Co-operation of Temperance Male and Female Nurses 41
General Nursing Association 40
Hospital for Sick Children 42
London Nurses' Association 41
London Temperance Nurses Co-operation 41
Male Nurses Temperance Co-operation 42
Mental Nurses Association 40
Mental Nurses' Co-operation 42
Nurses' Association 42
Nurses' Co-operation 41
Registered Nurses' Society 40
St. John's House 42
St. Luke's Hospital 41
Temperance Association of Male Nurses, Ltd. 41
Temperance Male Nurses Co-operation 41
The Retreat, York 41

**OFFICIAL NOTICES:—**
City of London Lying-in Hospital 39
Guy's Hospital 40
Guy's Hospital Medical School 40
London School of Tropical Med. 39
Queen Charlotte's Lying-in Hosp. 39
Royal Institute of Public Health 39
University of Cambridge 39

**PARTNERSHIPS & PRACTICES** 50

**RAILWAY & STEAMSHIP CO.'S.** 40

**SCHOOLS, PREPARATORY, &c.** 40

**TUTORS & LECTURERS** 40


## TRADE AND MISCELLANEOUS ADVERTISEMENTS


**AMBULANCES:—**
St. John Ambulance — Invalid Carriages 9
St. Martin's Motor Works—Tyres and Accessories 9

**BOTTLE MERCHANTS:—**
Isaacs 9

**CARRIAGES, MOTORS, &c.:—**
Armstrong—Liveries 9

**CHEMISTS & DRUGGISTS:—**
Allen & Hanburys—
Allenburys Throat Pastilles 17
Byno Lecithin, &c. 19
Chrismal 18
Anglo-French Drug Co.—
Galyl Outfit 28
Antikamnia Chemical Co.—
Antikamnia Tablets 30
Antiphlogistine 14
Bristol-Myers Co.—Sal Hepatica 37
British Drug Houses Ltd.—
Intramine, &c. 24
British Oxygen Co.—Oxygen 38
Bullock & Co.—
Pepsina Porci, &c. 36
Burroughs Wellcome & Co.—
Tabloid Tonics 22
Nizin, Local 23
Carnrick & Co.—
Dry Peptonoids, &c. 21
Christy & Co.—
Glyco-Thymoline 28
Ergoapiol 37
Gale & Co.—Compound Syrup of the Glycerophosphates, &c. 38
Heppells—Urodonal, &c. 12

**CHEMISTS—(Continued).**
Hewlett & Son—Liq. Santal Flav. e. Buchu et Cubeb 33
Lambert Pharmacal Co.—Listerine 30
Martindale & Co.—Chloroform, &c. 33
Maltine Manufacturing Co.—
Malto-Yerbine 21
Mawson & Company—
Santrocyl Gelatine Capsules 38
Newbery & Sons—
Pulvis Jacobi Ver. 38
New York Pharmaceutical Co.—
Hayden's Viburnum Compound 31
Parke, Davis & Co.—
Taka-Diastase 15
Raimes & Co.—Slinger's Nutrient Suppositories 6
Richards & Sons—Lactopeptine 31
S. P. Charges Co.—Sulphanga 37
Squire & Sons—Elixir Colloid, &c. 20
Trimurti Co.—
Tri Mur-Ti Peppermint Cream 38
Vinolia Co.—Royal Vinolia Shaving Stick, &c. Cover iv
Wilcox, Jozeau & Co.—Kola Astier 37

**DISINFECTANTS:—**
Boots Pure Drug Co.—
Chloramine-T 10
Condy's Fluid 38
Jeyes' Sanitary Compounds Co.—
Jeyes' Fluid, &c. Cover ii

**FOODS:—**
Bakers Flour Supply Co.—Flour 51
Bengers Food, Ltd.—
Benger's Food 18
Blatchley's Diabetic Preparations 38
Brand & Co.—Essence of Chicken 34

**FOODS—(Continued).**
Callard & Co.—
New Diabetic Foods 27
Chymol Co.—Chymol 29
Fry's Malted Cocoa Cover iii
Hommel's Hæmatogen 25
Horlick's Malted Milk Co.—
Malted Milk Tablets 32
Maconochie Bros.—
World-Famous Rat'ons 34
Manbu Food Co.—
Manbu Diabetic Foods 34
Sanaphos 19
Savory & Moore—
Peptonised Milk Preparations 35
Thomson & Co.—Pure China Tea 51
Valentine's Meat-Juice Co.—
Meat-Juice Cover iii
Van Abbott & Sons—Gluten Flour 35
Wander, Ltd.—Ovaltine 11
Williams & Co.—Vitamogen 27

**FURNITURE, &c.:—**
Carser—Furniture for Invalids, &c. 32

**MED. & SURG. APPLIANCES:—**
Bailey & Son—Bath Trusses 35
Davis—Lukens Uterine Cataract 8
Down Bros.—Hypodermic Syringe 34
Hogg & Son—Steam Vaporisers 9
Millikin & Lawley—
Osteology, &c. Cover iii
Robinson & Sons—Gamgee Tissue 9
Salmon Ody, Ltd.—Trusses 9
Surgical Manufacturing Co.—
Sterilized Dressings 52
Timpson & Co.—Catgut 9
Zeal—Repello Clinical Thermometer 9

**MINERAL WATERS:—**
Contrexéville Pavilion Cover ii

**OPTICIANS:—**
Bausch & Lomb Optical Co.—
Centrifuges 8

**TAILORS, BOOTMAKERS, &c.:—**
Burberrys—The Burberry 35
Harry Hall—Service Dress 9

**TOBACCO, CIGARS, &c.:—**
Player & Sons—
Perfectos Cigarettes 34

**TYPEWRITING, &c.:—**
Yost Typewriter Co.—Yost 8

**VACCINE LYMPH:—**
Chaumier's Calf Lymph 8
Jenner Institute for Calf Lymph 8

**WINES, BEER, SPIRITS, &c.:—**
Tuckey & Co.—Pure Malt Whisky 34

**X-RAY, &c., APPARATUS:—**
Medical Supply Association—
The Galvanoset 52

**MISCELLANEOUS:—**
Baughan & Co., Reading—Coil Sets 51
Carter—Surgical Instruments, &c. 51
Fitzgerald—10/12 Pilain 51
Gamage—Medical Books for sale 51
Grieve—Instruction in Cultivation 51
Kimpton—Journal of Physiology wanted Cover i

ABSTRACT OF

# The Lumleian Lectures

ON

# ACUTE POLIOMYELITIS.

*Delivered before the Royal College of Physicians of London on March 30th and April 4th and 6th, 1916,*

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ACUTE poliomyelitis has, during the last decade, spread in an epidemic form over the face of the globe, and considerable advances have been made in our knowledge of the disease. It is true that previous to 1905 small epidemics had occurred, but it is only since that date that it has had its present wide prevalence. During the last six years the experimental investigations of Flexner and his co-workers at the Rockefeller Institute, of Levaditi at the Pasteur Institute, of Leiner and v. Wiesner in Austria, and Roemer in Marburg, have thrown much light on the nature of the disease. A wider knowledge of the clinical manifestations has been gained, and the investigation of acute cases has rendered the pathological process more clear. It is my purpose to put before you in these Lumleian lectures the epidemiological, experimental, and clinical observations, and some points with regard to the treatment of the acute stages of the disease.

It is during the last five years that the disease has been recognised by the public health authorities in England as a definite specific fever, and notification has been adopted. The British Islands have suffered comparatively little during the epidemic periods. Although much has been discovered with regard to the nature of poliomyelitis, it has not yet been possible to apply that knowledge to its prevention, and much investigation still remains to be done, not only in the experimental but also in the clinical and epidemiological fields.* The similarity which the pathological changes have to those of rabies raised the hope that the precautions which have been so successful in dealing with that infection might be able to control poliomyelitis; but the disease in its spread bears such a likeness to that of meningococcal meningitis that this is hardly to be expected. It seems unlikely that any effectual remedy, other than prevention, will be found for a disease which is so fulminating in its attack, and so destructive in its effects on the central nervous system.

The first lecture will be devoted to the epidemiology and pathology, the second to the experimental, and the third to the clinical consideration of the subject. The names which have been used and suggested for the disease are numerous; but that of "acute poliomyelitis" has now come into such general clinical use, and is also used to describe the nature of the virus, that it is inadvisable to attempt to replace it. All that is required is that "poliomyelitis" shall be recognised as one of the acute specific fevers, having a tendency to affect any part of the central nervous system, and giving rise to a variety of symptoms dependent upon the portion affected.

## EPIDEMIOLOGY.

The history of the early epidemics of poliomyelitis, and its spread through Sweden and Norway and America were dealt with, and the evidence accumulated by Wickman with regard to the spread of infection by means of carriers along the lines of communication, roads, railways, &c. Certain factors were common to all epidemics—seasonal relationship, age incidence, and mortality—which commonly amounted to 11–12 per cent.

There have been earlier epidemics in Great Britain, and a considerable spread of the disease took place in Cumberland in 1910. In 1911 numerous epidemics were recorded throughout England, notably in Devon and Cornwall and the Eastern Counties. These were investigated by Dr. R. J. Reece, but no definite conclusion has been arrived at as to the mode of spread of infection.

In September, 1911, the Local Government Board made the disease compulsorily notifiable in London, and in September, 1912, for the whole country. For the years 1912–13–14–15 some idea can be obtained of its distribution throughout the community by consulting a series of maps; these show that the disease is distributed in a very irregular manner. A marked prevalence can be noted in the counties of Lancashire, Cheshire, Stafford, and Warwick during the years 1912, 1913, and 1914, and with a sharp decline in 1915. Northampton, Bedford, and Bucks suffered severely in 1912, but remained fairly free after that date. Gloucester and East Sussex, on the other hand, had a high incidence in 1915, neither of these counties being severely affected in the previous years. The number of cases notified during the years 1912–13–14–15 were 823, 736, 500, and 408 respectively. The mortality lay between 13 per cent. and 16 per cent., and the incapacity, owing to permanent paralysis, was about 50 per cent.

During the year 1913 an epidemic of poliomyelitis occurred in Barrow-in-Furness which was investigated by Dr. H. A. MacEwen, who noted that it was restricted to young children. It is known that Barrow-in-Furness suffered a severe epidemic of poliomyelitis investigated by Dr. R. P. Garrow in 1910. So the disease when it occurred again in 1913 fell upon a locality in which the susceptibles had been picked out by the former epidemic, and the population, except for those who had come into existence since 1910, had a natural or an acquired immunity. It would seem that the susceptible material of a population is fairly soon exhausted.

The study of maps illustrating the distribution of cases in the London area points to the fact that certain districts seem to have an exceptional incidence of the disease, but here again, as in the distribution about England, there is a considerable irregularity. The charts prepared from the notified cases of poliomyelitis during the past four years, both in London and England, show that the disease has pursued the even tenor of its way with the usual seasonal incidence. There is no reason to believe that its prevalence has been greater or less than it was in years previous to notification.

## PATHOLOGICAL ANATOMY.

Most observers of the present day regard the essential pathological change which occurs in acute poliomyelitis as an inflammation of the interstitial tissue of the central nervous system. This view has only been arrived at by the careful investigations of numerous observers in every stage of the disease. The leading points in the history of advance in this branch of the subject were dealt with. In 1905 Wickman examined a number of acute cases and showed that the process was not limited to the spinal cord, but occurred in disseminated form in the medulla, pons, cerebrum, cerebellum, and membranes. The process is mainly interstitial and of the infiltrative lymphocytic type. Wickman considers that within the nervous system the inflammation travels along the perivascular lymphatics; the perineural lymphatics probably carry the infection from the site of inoculation to the cord.

The lecturer showed, by a series of specimens from the brain, medulla, and spinal cord, that in addition to the perivascular infiltration there was considerable infiltration round the ganglion cells, and that these cells were destroyed by neurophagic cells, some of the ganglion cells being entirely replaced by these. The posterior root ganglia and the soft membranes of the cord shared in the infiltrative process. Sections of the peripheral nerves also showed infiltration, and in the later stages degeneration. The changes in the muscle were such that some fibres had undergone complete degeneration, whereas others were normal.

## EXPERIMENTAL POLIOMYELITIS.

In 1909 Landsteiner and Popper succeeded in transmitting poliomyelitis to two monkeys, but they failed to propagate the experimental disease beyond the first generation. Flexner and Lewis overcame the difficulty of propagation by substituting the intracerebral for intraperitoneal method, and were the first to transmit the disease through a series of monkeys. They, Levaditi, and others showed that the virus would pass the porcelain filter, that it withstood the action of glycerine and prolonged drying.

In October, 1913, Flexner and Noguchi published the method by which they succeeded in cultivating the organism of poliomyelitis on a special medium. The micro-organism consists of globoid bodies measuring from 0·15 to 0·3 micron in diameter and arranged in pairs. They showed that the

micro-organism fulfilled the conditions hitherto demanded for the establishment of a causal relation between an external parasite and a specific disease. The micro-organism exists in the diseased organs; it is capable of reproducing on inoculation the experimental disease in monkeys, from which animals it can be recovered in pure culture. Besides these classical requirements the micro-organism withstands glycerination as does the ordinary virus of poliomyelitis. Flexner and Noguchi, in conjunction with Amoss, carried the strain through 20 subcultures and proved that the final culture was pathogenic to monkeys.

The observers Kling, Pettersson, and Wernstedt, in Sweden, had the opportunity of investigating an epidemic of poliomyelitis in 1911. They obtained washings from the nose, the mouth, the pharynx and upper air passages and small intestines of a number of patients: (1) dead of the disease; (2) living cases; (3) abortive cases; and (4) healthy persons in contact with the infected individuals. With these washings filtered through a Heims filter they succeeded in infecting monkeys, and they showed that a larger number of individuals in all the above groups carried the organism.

The transmission of poliomyelitis by means of dead objects and flies has been investigated by Josefson, and Neustaedter and Thro investigated the dust of a room in which a case of poliomyelitis had been nursed. They succeeded after many failures in producing poliomyelitis in monkeys. Rosenau in 1912 demonstrated that poliomyelitis could be transmitted from monkey to monkey by means of the bite of Stomoxys calcitrans (stable fly), and this observation was confirmed by Anderson and Frost. Clark, Fraser, and Amoss in 1914 conducted a further series of experiments with stomoxys which gave wholly negative results, and a second series conducted by Anderson and Frost were similarly negative. The whole of the experimental evidence is strongly against the communication of the disease to man by flies.

Flexner, Clark, and Amoss found that a strain of poliomyelitic virus propagated in monkeys for four years displayed during that time three distinct phases of virulence. At the outset the virulence was low; but by animal passage it quickly arose to its maximum, the maximum was maintained for about three years, and without known change in external conditions, a diminution set in and increased until at the expiration of a few months the degree of virulence about equalled that present at the beginning of the passage into the monkeys. By resorting to the original specimen from which the virus was obtained a highly virulent strain was again produced. It is clear that the frequent and long-continued passage through monkeys finally brings about a depression of virulence, whilst preservation in a state of latency for a period equally great exerts no depressing action. The cycle of changes in virulence is correlated with the wave-like fluctuations in epidemics of disease, which also consist of a rise, a temporary maximum and a fall in the number of cases produced.

The pathological change found in the experimental poliomyelitis in monkeys agrees with those and is similar to those in man. Kling, Pettersson, and Wernstedt, however, have described changes in their experiments on monkeys which have no counterpart in man, and for this reason Flexner, Clark, and Fraser are unwilling to accept these cases as the result of poliomyelitis.

### POLIOMYELITIS IN ANIMALS.

Most observers have failed to transmit human poliomyelitis to animals other than the monkey and the ape. During epidemic periods, forms of paralysis have been noted in colts, horses, fowls, pigs, &c., but none of these paralyses have been proved to be due to poliomyelitis. Roemer in 1911 succeeded in transmitting a disease like poliomyelitis through a series of guinea-pigs; but monkeys were not susceptible to this disease. MacGowan describes poliomyelitis in sheep suffering from "loupin-ill," and the changes in the central nervous system were similar to those found in poliomyelitis. Flexner and Clark described paralysis in a dog simulating poliomyelitis. They were not, however, able to transmit the disease to other dogs. Marks was able to transmit poliomyelitis through a series of young rabbits. The animals suffered from no paralytic symptoms, and their cord showed no pathological change; but monkeys inoculated from their organs developed poliomyelitis, so that it is clear that the disease can be propagated by rabbits.

### SERUM DIAGNOSIS.

It has been shown that the serum of patients and monkeys who have recovered from an attack of poliomyelitis has viricidal properties, and it is possible to test the serum for these. This is accomplished by taking a 5 per cent. emulsion of the spinal cord containing the active virus and mixing it with an equal quantity of the serum to be tested. The mixture is kept at room temperature for several hours; it is then injected intracerebrally into a normal monkey. A control monkey receives the same quantity of virus. The control monkey becomes infected, the other remains free. Anderson and Frost by this method found in six out of nine suspected cases of abortive poliomyelitis that the blood serum was viricidal against the virus of poliomyelitis. The serum injected into animals has no preventive or curative effect. The sera of animals which are immune to poliomyelitis, such as the horse, &c., has no viricidal power either *in vitro* or *vivo*.

Numerous observers have tried the fixation of a complement method, and all agree that the use of an extract of organs containing the virus as antigen does not permit the discovery of antibodies in the serum or the cerebro-spinal fluid.

### CLINICAL FEATURES.

The clinical features of poliomyelitis may be most varied according to the part or parts of the nervous system affected. The grouping on an anatomical basis suggested by Wickman is that which is most helpful to the clinical description of the disease. The groups are as follows:—(1) The spinal form; (2) the bulbar, pontine and mid-brain form; (3) the cerebral form; (4) the cerebellar form; (5) the neuritic form; (6) the meningitic form; (7) the abortive form.

The spinal form is the common manifestation of the disease, but the clinical variations in this form are considerable and they are not always recognised as manifestations of poliomyelitis. The ascending type (sometimes called Landry), in which the progress of the disease is not uniform but becomes arrested for some days and then after an interval of 2–3 or more days again starts its upward course, is an uncommon manifestation of the disease.

The involvement of the thoracic and abdominal muscles with complete collapse of one lung is a rare symptom, but local paralysis of part of the abdominal muscles is somewhat more frequent. *Complete transverse* lesions of the spinal cord are not commonly recognised as poliomyelitis, but such occur and give rise on recovery to a spastic paraplegia. If the lesion is situated in the cervical region the clinical picture may be loss of power and atrophy of the muscles of the hands and arms, with a spastic condition of the lower limbs. Netter and Levaditi have shown by the serum test that the blood of a patient who had recovered from such an attack possesses the properties for neutralising the virus of poliomyelitis.

Paralysis of the neck muscles without affection of the bulb or shoulder muscles is an unusual manifestation, and such weakness of neck muscles makes it impossible for the patient to walk. Unilateral paralysis of the diaphragm occurs. Instances of affection of the cranial nerves and of ocular paralysis associated with blindness were recorded.

Among the rare manifestations in the *cerebral form* is that of athetosis. This occurred in a child in whom the left arm and left side of face showed athetotic movement, associated with flaccid paralysis of the left and partial paralysis of the right leg.

The *cerebellar form* is characterised by the acute onset of ataxia.

The *meningitic form* is one of the most interesting groups of poliomyelitis, and one which frequently leads to an error in diagnosis. The meningitis is indicated by the presence of lymphocytic cells in the cerebro-spinal fluid. Certain cases, however, manifest symptoms of meningitis without any change in the cerebro-spinal fluid. Some of these cases show on pathological examination characteristic poliomyelitic changes in the brain. Cases illustrative of the various types were given.

The *neuritic form* is one which many observers are not willing to accept as occurring in poliomyelitis. If the presence and persistence of pain are taken as the evidence of neuritis it may be asserted that there is no justification for the title, but cases are described after an acute onset in which there is symmetrical affection of the peripheral muscles of the limbs with loss of sensation over the extremities.

The *abortive form* has been described in the countries where large epidemics have occurred, but few cases are recognised as such in England, as the disease has never become widely spread in an epidemic form.

*Relapses in poliomyelitis.*—Reference was made to the so-called "jump" case of poliomyelitis in which the disease is not steadily progressive, but remains stationary for a day or two and then rapidly advances a further stage; arrest may again take place followed by further advance. Relapsing cases differ from the above in that the patient improves in the interval, and then after some weeks fresh symptoms develop which may again clear up, and then a further relapse may occur.

*Second attacks* of poliomyelitis are very rare. The literature contains some three or more instances of such, but none of them are very convincing, nor will they bear critical investigation.

*Cerebro-spinal fluid in poliomyelitis.*—The examination of the cerebro-spinal fluid in poliomyelitis has yielded variable results. In some the fluid has been normal, in others there has been an excess of albumin with a moderate increase of lymphocytes, in others again a very large increase of these cells has been noted. The condition of the cerebro-spinal fluid has varied not only with the time after the onset of symptoms at which the fluid was examined, but also with the nature of the case, the cases with the most marked meningeal symptoms tending to yield the largest cell count. Those who have had the opportunity of studying the cerebro-spinal fluid in the pre-paralytic stage have noticed a high percentage of polymorphonuclear cells, but in the large majority of cases seen in England, when the paralytic signs are well developed, the cell count is always lymphocytic and usually not very high.

The diagnostic value of the examination of the cerebro-spinal fluid was discussed. A high lymphocytic count is present in the cerebro-spinal fluid, in infection by tubercle, syphilis, mumps, measles, infective conditions of the sinuses and ear diseases, and also in a group of cases with acute meningeal symptoms described and investigated by Gordon. Monkeys inoculated with an emulsion from the spinal cord and from the parotid glands from these cases were unaffected, the presumption being that the cases were not cases of poliomyelitis. The nature of the virus to which the death of these children might be attributed must remain doubtful.

*Intra-uterine poliomyelitis.*—The occurrence of poliomyelitis in the fœtus during intra-uterine life is very difficult to prove. Not a few cases come under observation in which the paralysis is stated to have been observed immediately after birth, and when the child has come under observation the clinical features have been those of poliomyelitis. Flaccid paralysis of one arm due to birth injury of the roots of the brachial plexus is not rare, and Dr. Herbert Spencer has shown that hæmorrhage into the grey matter of the spinal cord in children dying at birth or soon after delivery is not uncommon. Two cases are reported in which the extensive flaccid paralysis of the muscles, not only of the arm but also of the legs, made it probable that the lesion was situated in the grey matter of the cord. The cases clinically resembled poliomyelitis. The condition was stated to have existed since birth, and in one of the cases pathological examination showed the changes in the spinal cord were those commonly found in long-standing cases of that disease.

*Herpes zoster in relation to poliomyelitis.*—It is well recognised that herpes occurs not only in association with a localised paralysis in the same individual, but is also liable to be present in an epidemic form at the same time of year. Many examples of herpes zoster on the forehead and face in association with ocular paralysis are on record; others of cervical herpes with facial paralysis; others of limb or trunk herpes with limb or abdominal paralysis. Several instances of such cases are given. Griffon examined the cerebro-spinal fluid in 11 cases of herpes, and found more or less marked lymphocytosis in all. In childhood the simultaneous occurrence of herpes and poliomyelitis is rare, and one case is quoted in a boy aged 7 years. Nearly all the recorded cases of paralysis associated with herpes are in adults and in many cases in elderly people, and it seems certain that many of these cannot be attributed to the virus of poliomyelitis.

*Poliomyelitis and a generalised vesicular eruption.*—A rash sometimes accompanies poliomyelitis formed of small vesicles widely distributed over the trunk and limbs. The vesicles resemble a small chicken-pock.

## TREATMENT.

Recognising that poliomyelitis is an acute specific fever, having an incubation period of 4–12 days, the patient should be isolated. The infectivity is very slight, and in hospitals it is not necessary to place the patient in a separate ward, bed isolation being sufficient to prevent the chance of infection. As the virus is known to exist in the nasal and buccal mucous membrane it is essential to pay careful attention to the discharge therefrom.

*Serum treatment.*—It has been shown experimentally that the serum of patients who have recovered from an attack of poliomyelitis has the power to destroy the virus *in vitro*, but that this immune serum has no power to prevent the development of the disease when injected simultaneously or after the virus has been injected. Flexner and Amoss have shown that intraspinal injection of an immune serum is effective when introduced in the pre-paralytic stage in delaying and preventing poliomyelitic infection in a monkey. This method of intraspinal injection of immune serum has been used with success by Netter in cases of poliomyelitis of the acute ascending variety. The method is as follows. Some 20–30 c.c. of blood are obtained by veni-puncture from a patient who has passed through an attack of poliomyelitis (the length of time after the attack is not important, for it has been shown that the blood preserves its antitoxic properties for several years). The serum is separated by allowing the blood to clot and by centrifugalisation. Lumbar puncture is performed on the patient, and an amount of cerebro-spinal fluid removed corresponding to that of the serum which it is proposed to inject—usually about 10 c.c. The serum is now slowly injected, and the bed of the patient tilted so as to allow it to gravitate cerebralwards, the injection being repeated daily for three to four days.

There is little or no difficulty in carrying out the treatment. The difficulty is to obtain an old case of poliomyelitis who has already been tested and given a negative Wassermann and who is willing to give the necessary blood at the same time as a suitable case of acute poliomyelitis presents itself for treatment. It is useless to carry out the treatment when the disease has already become quiescent, and the most suitable cases are those (1) presenting symptoms of an ascending or progressive poliomyelitis; (2) presenting meningeal symptoms; (3) (if the diagnosis can be made) in the pre-paralytic stage.

Since animals are immune to poliomyelitic virus, the possibility of employing the sera of animals has been considered; but Flexner and Lewis found that the sera of horses and rabbits had no viricidal action, sheep's serum was slightly active and might be increased by injection of the virus, but the degree of activity is small.

*Rest.*—There can be no doubt that rest is the most important factor in treatment: the too early movement may in some cases re-start the disease which has become quiescent. A child with an acute attack of poliomyelitis should be kept absolutely at rest in bed for at least three weeks. The principles by which physiological rest can be secured to the muscles were considered, and the conclusion arrived at was that the paralysed muscles must be put into the "zero position," a position defined by Mackenzie as the position in which the individual muscle itself is relaxed and both its own action and that of its opponents prevented. Sherrington has shown that postural contraction which counteracts the effect of gravity can be maintained for long periods without fatigue, and a position which can be maintained without fatigue must be a position of rest.

*Posture.*—Various methods have been adopted for keeping the affected muscles at rest. Most of them tend to immobilise the patients for many months. It is important whilst keeping the completely paralysed muscles in a normal zero position, and at rest, to encourage other muscles, which may have been more or less affected, to resume their normal function. This is accomplished by re-education. The erect position and walking are the best forms of re-education for the trunk muscles. The method of re-educating the severely paralysed muscles is described below.

*Splints.*—The practical application of the above principles has been carried out by placing the paralysed limb or limbs

in celluloid splints, accurately fitted to the limb *as soon as it is possible* to make the cast after the onset of the disease; as the splint is to serve in most cases not only for keeping the muscles at rest, but also as a support in walking, it is important that the position of the limb should be such that progression is possible. These splints were first used by Calot, and introduced into this country by Gauvain,[1] who has used them in the treatment of tuberculous joints.

The splint is moulded on a plaster-of-Paris cast of the limb, and it is the taking of this cast that is important; for the limb must be in the zero position, or, in other words, the position normally assumed to counteract the effect of gravity when the patient is in the erect position. That position, so far as the legs are concerned, is one of slight flexion of the knees with the foot at a right angle, or an angle slightly greater than a right angle to the tibia.

The advantages of this form of splint are:—(1) That they maintain the muscles constantly in a position of rest, for they can be worn day and night; (2) they do not immobilise the patient, so that walking exercise can be carried out without the liability to produce deformity or stretching of the muscles; (3) they are easily removed and replaced, so that other methods of treatment can be carried out; (4) no special boots or shoes are required.

*Re-education.*—In re-educating a severely paralysed muscle it is important in the early stages to place the limb in such a position that the load on the muscle is at its minimum, and only a very small force is required to overcome the effects of gravity. A bath is an excellent place to practise the re-education of badly paralysed muscles; for the weight of the limb is supported and ranges of movement are possible which without the support of the water are impossible. Walking exercises and the erect position are the best forms of re-education for the trunk and abdominal muscles. When once the legs are splinted it is possible to get the patient into the erect position, and such allows of the physiological use of the back, trunk, and pelvic muscles Such walking exercises are carried out by the use of a walking machine which supports the patient both physically and morally; for it is important to give the patient the feeling of complete security.

*Other methods of treatment.*—Other methods of treatment are by massage, electricity, and baths. The surgical treatment is not dealt with here.

*Results.*—During the last four years these postural and re-educational lines of treatment have been carried out in all acute cases with the result that very few deformities have arisen. Such as have occurred were due to the contraction of the flexor group of muscles at the hip.

*Conclusion.*—The adoption of the practice of placing the limb in a position of rest at an early stage of the disease will not only facilitate recovery but prevent the greater proportion of deformities now seen as the result of poliomyelitis.

[1] THE LANCET, March 4th, 1911, p. 563, and March 22nd, 1913, p. 826.

TRAGIC DEATH OF A MEDICAL MAN.—Mr. James Hamilton, L.R.C.P., L.R.C.S.Edin., L.F.P.S.Glasg., of Hayle, Cornwall, died suddenly on April 2nd in his motor-car, while on his round visiting patients; he was in his forty-eighth year, and leaves a widow and child.

LEICESTER ROYAL INFIRMARY.—The 143rd annual report of the Leicester Royal Infirmary (for 1915) is a record of excellent work accomplished under great difficulties. Leicester being the headquarters of the 15th Northern General Hospital, the honorary staff of the Infirmary were gradually requisitioned as the military hospital continued to be enlarged, and war service also absorbed resident medical officers and nurses. The number of beds made available for wounded soldiers was 160, while 200 were in use by civil patients. Some 400 recruits rejected from military duty by reason of physical disabilities received surgical attention and were subsequently enlisted. In addition many recruits received attention in the special departments of the Infirmary. In the civil wards 3082 adults were admitted and 674 children, as compared with 3264 adults and 657 children respectively in the previous year. In the military ward 692 patients were treated. In the out-patient department there were 4352 new cases and 10,004 old cases. Unfortunately, the expenditure shows an increase of £3240 on the previous year, the total for 1915 being £28,821.

A NOTE ON THE

# IMPORTANCE OF AUSCULTATION IN THE DIAGNOSIS OF THE VASCULAR INJURIES ACCOMPANYING GUNSHOT WOUNDS.

BY SURGEON-GENERAL SIR GEORGE MAKINS, K.C.M.G., C.B., F.R.C.S. ENG.,
CONSULTING SURGEON TO THE EXPEDITIONARY FORCE.

WELL-RECOGNISED and characteristic as are the murmurs produced by the existence of traumatic openings in the walls of the blood-vessels, yet the routine employment of the stethoscope for their detection seems hardly so generally adopted as should be the case. The importance of this method of examination is obvious in any class of wound, but it is especially valuable in the case of the multiple wounds inflicted by the various forms of fragments derived from the bursting of high-explosive shells and bombs. In these injuries one wound amongst a dozen or more superficial lesions may pass deeply into the body and cause a vascular injury, the existence of which may be readily overlooked by ordinary methods of examination.

A few examples illustrative of the value of the method may be opportune and of some utility.

(*a*) In a patient admitted with a compound fracture of the leg, the absence of pulsation in the posterior tibial artery behind the inner malleolus and in the dorsal artery of the foot indicated that both the anterior and the posterior tibial arteries had been divided. An exploration confirmed this assumption, and both vessels were ligatured. The further progress of the case was not satisfactory, and a rise of temperature, accompanied by fresh swelling of the calf, suggested that an extension of infection from the primary wound cavity was taking place. Auscultation of the limb revealed the presence of a loud systolic bruit over the course of the peroneal artery, and this vessel was cut down upon and ligatured above and below the wounded spot.

(*b*) A patient who had sustained multiple bomb wounds of the calf, after a short stay in France was transferred to England for further treatment. After a period of some months the man was passed again as fit for active service and returned to his regiment. Thence he was sent to hospital in consequence of swelling of his leg. Auscultation, probably employed for the first time since the injury was received, revealed the presence of a loud "machinery" murmur due to the existence of an unrecognised arterio-venous communication.

(*c*) A man received a wound from a fragment of shell which entering over the spine of the right scapula was retained in the body. On examination the fact that blood had been expectorated and that dullness existed at the right base suggested that a hæmothorax had developed. On examination of the chest a loud double murmur was audible over the entire præcordium, and this was conveyed to the left base. This murmur was assumed by the first observer to be cardiac in origin, but on further examination, a typical "machinery murmur" was detected below the right clavicle and an arterio-venous communication between the innominate vessels was diagnosed. The death of the patient from violent hæmoptysis the same night allowed this diagnosis to be verified, as also the absence of any valvular cardiac lesion.

These three instances serve to emphasise the value of this method of physical examination and to impress the fact that in any case of swelling of a limb in connexion with a gunshot wound the stethoscope affords a ready and certain means of establishing a diagnosis. Further, observation of the point at which the bruit is loudest and highest pitched will serve to localise the exact position of the lesion. The method is far more reliable than the uncertain practice of examining for the state of the distal pulse, for this is obliterated only if the vessel has been completely severed, or in the rarer instances in which large masses of hard clot exist to compress it, while diminution of size and force is more likely to be due to moderate pressure from without than to the existence of a lateral wound in the wall of the artery.

The third case (*c*) raises another question of some importance; although the local murmur could not have been overlooked during the process of examination of the chest to determine the presence of blood in the right pleura, yet the murmur was first detected in the cardiac region and thought by the observer to originate in the heart. Now,

the examination of a large series of arterial wounds has shown that in a very considerable proportion of the cases the local murmur, whether systolic if purely arterial in origin, or of the "machinery type" in arterio-venous lesions, is conducted to the heart. Further, that such bruits, although temporary, may persist for several weeks. The method of conduction would seem to vary according to the position of the vascular injury and the distance of the local lesion from the heart. In the case of injuries of an arterio-venous nature to the vessels of the axilla and neck, the murmur appears to be conducted by the whole mass of the tissues of the thoracic wall, and this view is supported by the observation that the normal heart sounds can readily be distinguished by the continuous roar audible over the whole cardiac area, the continuous roar preventing the discrimination of any abnormality in the systolic or diastolic periods. I have not met with any instance in which a pure arterial murmur in connexion with a wound of the vessels of the arm or forearm was audible in the heart, but I have noticed it in a carotid aneurysm, and in the case of wounds of the femoral vessels the condition is comparatively frequent.

When the murmur is conducted upwards from the lower extremity it appears to be conveyed by the column of blood in the vessels. In the arterio-venous injuries this is not surprising because the roar of the continuous murmur is always transmitted the more widely in a central direction. When, however, the bruit is due to a purely arterial lesion the circumstance is less likely to have been suspected, because in the majority of instances the pure systolic bruit is more freely transmitted along the limb in the peripheral direction. In spite of this fact, however, a systolic bruit, even not of a very loud character, may often be readily audible at the cardiac apex. The pure systolic murmurs are heard at the apex alone, but in one case of arterio-venous aneurysm of the thigh the double murmur was conveyed also to the base of the heart.

It may reasonably be asked why these transmitted murmurs are only of temporary persistence? The fact seems explicable on the ground that the existence of a gap in the wall of a large vessel gives rise to a very considerable disturbance in the heart's action. A certain degree of dilatation of the organ nearly always develops rapidly, the heart's apex reaching the nipple line or extending beyond it; its action is rapid; and some disturbance of the relative duration of the periods of systole and diastole occurs, the latter phase being somewhat prolonged. This disturbance tends to settle down when the patient is kept at rest in the recumbent position, and with its disappearance the transmitted murmurs also become inaudible. The cardiac upset is probably to be explained by the sudden alteration in the force required for the maintenance of the general circulation under altered conditions, and the view that an increased burden is placed upon the organ, even when a great vessel is only encroached upon to the extent of a portion of the contained blood needing to be circulated in a cavity of moderate size in communication with the lumen, appears to be supported by the fact that the peripheral blood pressure of the limb beyond the lesion remains persistently below the normal. Examination of a number of limbs in which such lesions existed has shown a difference of some 20 mm. of pressure measured by the sphygmomanometer, in fact a difference amounting to that which follows complete obliteration of the lumen by ligature of the vessel.

I have dwelt upon this question of the cardiac bruits, not because the presence of a conducted murmur can be of general use in diagnosis, in view of the fact that such an occurrence is not a necessary accompaniment of an arterial lesion. Still, the detection of an apical systolic murmur in a young healthy subject with an injury to the thigh might draw attention to the fact that a grave arterial lesion was present in the limb, and lead to its detection when the absence of local pulsation, together with the presence of free pulsation of the peripheral vessels, had led to the question of a serious vascular injury being placed aside.

MEDICAL MAGISTRATE FOR TORQUAY.—Mr. George Mitchell Winter, L.R.C.P. Lond., M.R.C.S. Eng., D.P.H. Cantab., the deputy mayor of Torquay, has been placed on the commission of the peace for that borough.

# SHOCK[1] AND THE SOLDIER.

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[*Note.*—Although I am wholly responsible for this article it is published with the knowledge and consent of Major R. G. Rows, R.A.M.C. I have to thank Mr. T. H. Pear and Mr. E. Gleaves for many suggestions and criticisms.—G. E. S.]

IT is generally admitted that never before in the whole history of war have the arrangements for the welfare of the soldiers been so well organised and on the whole so efficiently administered as those of our medical corps in the present war. Perusal of foreign medical journals makes it abundantly clear that the other combatants, not only our Allies, but also our enemies, have been closely studying all that we have been doing in this respect, and have not hesitated to benefit from our experience and to adopt many of our methods. It seems to me that we might follow their example much more than we have been doing, and in certain departments of medical work learn from them, or rather add their experiences to our own, in coming to a decision as to the best way of dealing with our own difficulties.

Among these the manifold problems relating to soldiers suffering from what may be designated by the vague and non-committal term "shock" (see footnote) are urgently calling for full consideration. These issues are of far-reaching importance and their solution involves matters of enormous difficulty. They concern not only the welfare of the individual patient, but also the maintenance of the efficiency of the combatant forces. In our system of selecting recruits the man with a varicocele or slight hernia is rejected, even though the greatest risk which accepting him would entail is the possibility that he himself might fail in an emergency. But no measures are taken to exclude the mental weakling, whose failure might lead to infinitely graver consequences, not merely to himself but to the whole of his unit. Even when the reality of such risks has been practically demonstrated by nervous breakdown, such men on recovery are still liable to be sent back to the firing line, in spite of what experience has now proved to be the certain knowledge that they will be useless as combatants, and will almost certainly succumb at the first strain.

But grave as these risks are, and urgently as they are crying out for remedial measures, there are other problems of this kind to be solved which will have a more profound and far-reaching influence upon the social—and, I may add, also the financial—welfare of the whole nation after the war.

There is no class of patients in the military hospitals concerning whom there is so much divergence of opinion as these, not merely as regards the methods of diagnosis and the mode of treatment that should be adopted, but also with reference to the wider questions as to what ought to be done with them after their discharge from hospital. This matter, therefore, is pre-eminently one concerning which it is desirable to obtain the reasoned views of competent and experienced men, irrespective of the side upon which they are serving.

Everyone who has had any dealings with the patients in the military hospitals scattered throughout this country must admit that much more might be done for patients suffering from some of the protean manifestations of "shock" than is being attempted at present. The general military hospitals contain scores of the milder shock cases, with which the medical officers have neither the time, nor, in many cases, the special knowledge, to deal. Such patients may recover of themselves without any attention, but a large number of them tend to get worse, and if they are left without attention their symptoms are apt to become stereotyped into definite delusions and hallucinations. Moreover, in a general hospital such men may become a constant source of disturbance and annoyance to other patients and to the nurses. One of the symptoms of their illness is a morbid irritability—they become upset and sometimes take offence at the merest trifles[2]—and this leads to trouble with patients, nurses,

[1] I am fully aware of the inadequacy and inappropriateness of this term, but the plain English word is less likely to give rise to misunderstanding or to involve me in the business of explaining terminological inexactitudes than the use of more technical language would entail.

[2] Major Rows: Mental Conditions following Strain and Nerve Shock, Brit. Med. Jour., March 25th, 1916, p. 441.

and the medical officers responsible for discipline. But if special consideration is shown them by the nurses the other patients are apt to misunderstand it, and even complain of favouritism. In other words, when mixed with wound cases in a general hospital, these nervous patients are apt to be regarded as a nuisance—which is bad for them and for the proper working of the hospital. Another consideration, also, is that the subjection of such men to the irksome regulations of military discipline, and the usual penalties for infringing them, is so potent a factor in producing disturbance as often to be quite fatal to any hope of amelioration. In a special hospital the wind can be tempered to the shorn lamb.

How is this situation to be remedied? In the other combatant countries, to judge from the medical journals, ampler provision has been made for dealing with this problem than has been done here.[3] The chief object of this communication is to set forth the views of some of those who have had to meet the infinitely vaster question of coping with the situation as it has presented itself to the medical corps in Germany and France, and incidentally, in the light of this knowledge, to urge that further efforts should be made in this country to deal with a problem which even here, where its magnitude is less, is one of great complexity and difficulty, the proper solution of which is becoming more urgent every week.

The men who are best equipped, both by their special knowledge and experience, as well as their present responsibilities, to deal with the matter, are for the most part much too busy dealing with the immediate practical issues to find time to consider or write about the wider questions with which I propose to deal here.

During last summer vacation I was allowed to take some small part in the work at the Military Hospital at Maghull, of which Major R. G. Rows has given a brief sketch[4] in the *British Medical Journal*. Living in the hospital with six officers who were devoting the whole of their time and energies to the diagnosis and treatment of soldiers suffering, for the most part, from mild forms of mental disturbance, even a few months of such intensive study gives one a very clear insight into the complexities and the enormous difficulty of the problems that have to be solved.

Nothing could be better calculated than such an experience to impress upon one the danger of publicly expressing opinions on the thorny questions of treatment, and the risks to which those who "rush in where wise men fear to tread" render themselves liable. Some explanation therefore is due at the outset for my venturing to break away from the attitude of discretion. For even the general consideration that questions of far-reaching importance are crying out for full discussion at the present moment is hardly a sufficient reason for a tyro to attempt to force the consideration of them upon the attention of the authorities and the medical profession.

On returning to university work at the beginning of the winter session, with the assistance of my colleague, Mr. T. H. Pear, I began to study the foreign medical journals that were available, for the purpose of comparing our short experience of these mental cases with that of the French and German medical officers. At the same time, mainly in response to numerous requests for information as to the nature of the work being carried on at Maghull, I was brought into communication, directly or indirectly, with medical officers working both in general and special hospitals in all parts of the country and abroad. This opened my eyes not only to the fact that there were considerable numbers of milder cases of "shock" scattered about in the general hospitals, but also that many medical officers, faced with the problem of treating such ailments, were anxious to learn something about their diagnosis and treatment, of which they frankly confessed themselves profoundly ignorant.[5] I have repeatedly been asked for enlightenment by general practitioners, suddenly called upon to deal with these specialised problems; and when they have been referred to authoritative statements,[6] it is customary for them to reply that they have neither the time nor the energy for the task of trying to understand the discussion of complex mental phenomena. It was the consciousness that a mere "outsider" like the writer might perhaps be able to draw a crude sketch more apt to appeal to such men than the statements of a specialist would be—even though he speak with more authority—which finally overcame my reluctance to undertake a task which so readily lends itself to misunderstanding.

Additional reasons for writing were, firstly, to call attention to certain statements in foreign medical journals, and, secondly, incidentally to raise for consideration some far-reaching general problems arising out of the question of these mentally afflicted soldiers. Without strong incentives such as these I should not have felt justified in attempting this task.

In coming to this decision I was also influenced by the remarkable position taken up by certain neurologists at the informal discussion of these cases of shock, which took place in London last November, under the auspices of the Medical Research Committee. One speaker made the remark that many of the patients suffering from shock "gave no history that threw any light upon their present condition," as though he expected that such men knew the causes of their illness, and would, in the course of a few minutes' chat, unveil the innermost secrets of their lives as readily and frankly as they would give the information that they had had measles.

### *The Importance of Diagnosis.*

In the first interview with one of these patients, in the course of which the physician endeavours to obtain the details of the history of the trouble and makes the physical examination, it happens more often than not that he is unable to extract anything whatever that has any direct bearing upon the real causes of the illness. Even though the physician spends an hour or two in this preliminary cross-examination, in many cases no light is shed upon the patient's real history. In fact, many such prolonged inquiries may be made before any relevant information is obtained, and even then often the truth begins to emerge only after the patient's dreams have been obtained, either from his account of them or from inquiries as to the meaning of phrases shouted out during sleep.

In respect of such cases one often hears the comment made that the dreams are merely memories of incidents at the front. But if the trouble is taken to get a detailed record of dreams, in which every incident, however trivial and absurd it may appear, is noted, it will be discovered that in many cases the experiences at the front are blended with some episodes utterly alien to the war. If cross-examination of these incidents be conducted with patient persistence and discretion—and this is the kind of inquiry that does not demand any expert knowledge,[7] but simply common sense, discreet sympathy, and tact—it will very frequently lead up to some event in the patient's past history, the revivified emotions associated with which the war incidents have served to awaken, by stirring up similar emotions. By this simple process, if continued patiently day by day *by a physician who is striving to look at events from the patient's point of view*, the real reasons for the continuance of the shock symptoms are almost sure to be revealed. Without these means, and without such prolonged individual attention, the real nature of most of these cases is not likely to be discovered, and unless the causes are revealed the treatment cannot be other than empirical and fortuitous. I have repeatedly heard the argument that it is altogether unnecessary to attempt to diagnose such cases, and that isolation is the appropriate treatment for them, because Private X or Sergeant Y was so treated and made a perfect recovery. One might with equal cogency, or the lack of it, argue that it is unnecessary to diagnose a suppurating appendix as the cause of a case of peritonitis, because one has known of patients A and B who recovered after being treated with opium and the

[3] The reports published in the special war numbers of the *Revue Neurologique* (and especially Nos. 23, 24, November and December, 1915) bear ample testimony to the magnificent work being done by the French in this direction. Not only has special provision been made in each military district for dealing with neurological and mental cases, but also admirable reports upon the work are being published, and those responsible for the care of such patients have been afforded many opportunities for discussing their difficulties and learning one from the other.

[4] Op. cit., supra.

[5] It is a remarkable fact that Dr. Bernard Hart's excellent little book, "The Psychology of Insanity," which has had such a large circulation among the laity, seems to be almost unknown to the medical profession.

[6] Such, for example, as Déjerine and Gauckler's eminently sane and wise treatise, "The Psychoneuroses and Their Treatment by Psychotherapy," (Smith Ely Jelliffe's translation, second English edition, 1913).

[7] Nor, contrary to the opinion expressed in a leading article in THE LANCET of March 18th (p. 627), any special vocabulary.

application of linseed-meal poultices. But just as no modern surgeon would regard the success of such individual cases as any excuse for not diagnosing and operating upon a suppurating appendix, so also the physician is not justified in arguing that correct diagnosis and appropriate treatment are unnecessary in cases of nerve shock.

But the question is constantly being asked, "How do you know when the *true* cause is discovered?" It is recognised by means precisely analogous to those by which a case of peritonitis is diagnosed to be the result of a suppurating appendix and not of pyosalpinx or any other lesion. The causal relationship between the symptoms and the history is, as a rule, so clear and indubitable that no one who has thoroughly investigated even a single case of "shock" can have the slightest doubt about the etiological nexus.

*The Development of the Symptoms.*

At the time when these notes were first drafted (November, 1915) hardly anything had been published in our medical journals on the subject of shock; and my aim was to compile a summary of the large series of most instructive reports that had appeared in the French and German journals. Since then, however, several important contributions to the discussion of this matter have been published in our journals. But though these articles simplify my task they do not affect the need for such a statement as I propose to make here.

In his vivid and sympathetic account of the phases through which officers pass when becoming neurasthenic, Dr. David Forsyth[8] called attention to the difficulties encountered in the past in defining "the nervous effects of intense emotional strain involving the risk of death," and how that after 20 years of discussion Bailey hit upon a means of escape from the clinician's dilemma by defining some of the cases as "mixtures of hysteria and neurasthenia."

Now, the fact does not seem to have been sufficiently emphasised that the terms "hysteria," "neurasthenia," "hypochondria," "mania," and "melancholia" are essentially labels given to groups of symptoms after they have become more or less stereotyped and systematised by each individual patient. In soldiers invalided from the front the physician has to deal, at any rate for the most part, with acute cases in which this process of systematisation has not gone very far. By labelling the outstanding symptoms "hysteria," "neurasthenia," "mania," or any of the rest of the terminological battery, there is a grave danger of overlooking the essential identity of the fundamental causes and nature of the trouble to be dealt with.

The many-sided manifestations of "shock" are in large measure determined by the inherited nature of each individual patient, but probably also, to an even greater degree, by his previous history and experience. In a not inconsiderable number of cases, however, the intensity and horror of the trauma are sufficient to explain the causation and to determine the form of the mental disturbance. As the culmination of months of mental strain and emotional stress, some terrifying experience indelibly imprints itself on the patient's mind and forces him to continue, day and night for weeks together, to see again and live through the awful moments; his attention remains wholly concentrated upon this experience, and he pays little or no attention to what goes on around him. If left to himself he will act in the way of all mankind and endeavour to interpret his feelings. Thus, if he continues to see visions of the scenes at the front, or to hear the sounds of bursting shells or the cries of his stricken comrades, he will explain these impressions to himself in accordance with his own experience and training. In other words, he will rationalise and systematise his new sensations until they become definite hallucinations and delusions, the precise form of which will be determined by the individual's previous history—i.e., by the way in which his accumulated knowledge and experience enable him to explain to himself and to interpret his new feelings. It is obvious that if such a patient comes into the hands of a physician before this process of rationalisation and systematisation has become established, the medical officer should be able to meet the patient's difficulties and help him correctly to interpret his unusual experiences. In this way the stereotyping of his erroneous interpretations—i.e., the development of systematised delusions or hallucinations—can be prevented.

[8] THE LANCET, Dec. 25th, 1915, p. 1399.

*The Influence of the Individual's Life-history.*

Even in such cases, where the culminating incident at the front has both started the trouble and determined its form, it is impossible wholly to exclude the influence of the individual's experience and life-history.[9] For in the procedure of rationalisation these are the sole sources of the knowledge made use of in this process, and therefore are mainly responsible for shaping his interpretations of his new experiences. Even before this stage is reached incidents in his past life, the memories of which are charged with a strong emotional tone, will influence the earlier after-effects of the terrifying experience at the front. Thus even in what seem at first sight to be straightforward cases of mental disturbance due directly, say, to shell concussion and the emotions associated with it, there is usually a definite link with the patient's previous experience. In most cases, however, this plays a much more obtrusive rôle. Let me cite a case in illustration of this, and I shall choose one to illustrate another point in addition—viz., that such troubles may develop without any shell concussion.[10]

A man, who had only recently been an inmate of a sanatorium, volunteered for military service at the outbreak of the war. After being at the front for about three months, during a most trying period of the campaign, he was sent to England as a case of neurasthenia. From his case-sheet little could be learnt except that he was subject to "dazed conditions." When seen in hospital he was suffering badly from insomnia; and the little sleep which came to him was constantly preceded by visions of two of his comrades who had been terribly lacerated alongside him. These hallucinations always seemed quite real to him at the time he experienced them, and aroused in him an intense fear that he was mad. It is important to notice that he was not subject to hallucinations during the day-time. Now, although these pre-sleeping experiences are of fairly common occurrence in the case of many normal individuals, they were novel to him, and they had begun to disturb him more and more seriously. He also had terrifying dreams, which regularly began with episodes at the front, and, without the interruption of awaking, changed as regularly into representations of sexual experiences, ending with seminal emissions. This latter fact, added to the bewilderment caused by his pre-sleeping visions, made him believe that he was insane, because it revivified a terror experienced when a boy from reading trashy literature.[11] These writings had convinced him, at the time, that he was going mad, because he had spermatorrhœa. The recurrence of these emissions, and of all that they implied to him, at the very time when he was suffering from pre-sleeping or "hypnogogic" hallucinations, had served to convince him that he was insane. He was in this condition when he came under treatment. It was first explained to him that hypnogogic experiences occur frequently in perfectly normal individuals. Examples taken from the writings of psychologists who have studied such phenomena, both in themselves and others, were used to illustrate this fact. Further, it was pointed out to him that his hallucinations did not occur except at the moment of falling asleep. The result of this talk was that although the images still presented themselves at night he was no longer afraid of them. By explaining to him in an elementary way the structure and functions of the

[9] The importance of the patient's past history has been stressed by Lieutenant-Colonel C. S. Myers in THE LANCET of March 18th, p. 608.

[10] In Dr. Forsyth's article, to which I have already referred, an admirable account has been given of the development of a condition when the patient's mental balance becomes liable to be upset by some trifling episode.

[11] In a very considerable proportion of these cases the literature which the patients had been studying, especially during adolescence, played a very obtrusive part in determining their present troubles. This applies not merely to pseudo-physiological works, but also to certain classes of books dealing with social and political problems. To me the extent of the influence of such writings has been a most amazing revelation. This subject is well treated in Stanley Hall's "Adolescence," vol. i., pp. 456–463.

It is very difficult to understand Dr. Forsyth's attitude (op. cit., p. 1400) in ascribing "the neurasthenia of civil practice" as "known to be the specific result of excessive onanism." In the cases that I have personally examined, or read about, it has been impossible to lay any of the blame on onanistic practices: but the terror which false teaching has inculcated regarding the effects of such practices has been a most lethal weapon in disturbing the equilibrium of many patients. The fact that much of this literature is the work of misguided cranks, who intend (or, at any rate, make the pretence of doing so) their writings to be warnings about the dangers of certain practices, makes them more potent instruments of destruction. Their very teaching is largely responsible for creating the dangers against which they pretend they are warning their victims. It is deplorable that nothing is done to combat the bad influence of this "literature."

Dr C. A. Mercier's characteristic protest (THE LANCET, Jan. 15th, 1916, p. 154) against Dr. Forsyth's statement is no doubt quite justified; though, of course, in using it to attack the whole theory of the rational treatment of incipient mental disturbance he allows his facile pen to run away with him.

sexual organs, it was easily brought home to him that there was no truth in the false and pernicious literature he had been reading, but that his spermatorrhœa was a not unnatural incident in a man situated as he was. By discussing with him and explaining lucidly the nature of his disturbance, his condition was rapidly improved. He exclaimed, "Why wasn't I taught this when I was a lad; for then I should have been spared all this trouble." It was necessary for his medical attendant daily to talk to him and clear away his difficulties. But he relapsed again as the result of a quite trivial incident. Having leave out for an afternoon he went to the railway station to say farewell to his wife, who had been visiting him; she was taken ill at the station, and he accompanied her home; the result was that he was some hours late in returning to hospital, and was punished for it. The punishment of being confined to barracks is regarded by most soldiers as a purely military offence to which no moral stigma is attached. But in this man's case it produced the most profound depression and he talked of suicide. It was established afterwards that this attitude was due entirely to the exaggerated importance which in his condition of nervous instability he had attached to an early incident. It appears that when he was a child he was greatly upset by the fact of his father being sent to gaol. Because of this trouble the present trivial military offence assumed a special gravity in his eyes. He complained that he was tainted by his father. The nonsense written by some popular writers on heredity had led him to imagine that his present "criming" was due to the inheritance of his father's failing. This misconception being removed, the patient's condition improved immensely.

In such cases the full and frank discussion of disturbing factors such as this, and the clear exposition of the common-sense point of view, is immediately efficacious, and if persisted in regularly and conscientiously brings about a gradual and often rapid improvement.

This case illustrates how the continuance of the trouble may be due to incidents which in themselves might appear to an "outsider" to be altogether trivial and to have no connexion with the causation of the present illness. If full and patient inquiry is not made into such causes of disturbance, no treatment is likely to be efficacious: yet when discovered and explained, the patient's relief at once becomes apparent. This is not mere empty theory; but the common-sense point of view, of the truth of which every man's experience of the causes of his own moods should convince him. But in a still larger proportion of cases the necessity for unveiling the previous history of the patient becomes more insistent, because certain incidents in his past experience are responsible, not only for the persistence of his trouble, but also for determining the form his illness takes.

In many of the cases in which the shock-effects persist—and, of course, I am referring to those patients whose trauma is psychical—one important reason seems to be that the physiological expressions of the emotion excited at the time of the trauma—which expressions persist for a long time afterwards[12]—have served to link on to the present trouble other incidents in the individual's past history which were associated with similar emotional effects.

One of the chief difficulties in obtaining a general consensus of medical opinion in support of some definite scheme for dealing with these difficult problems is due to the fact that so many physicians refuse to admit the reality of the facts just stated. They claim that incidents which happened to a patient years ago can have no direct bearing on his present illness. It is inconceivable that such claims can be persisted in by any physician who has really investigated even a single one of these shock cases. The inquiry into the meaning of the symptoms links up the present condition with the past history in so definite and conclusive a manner that it is altogether incredible that anyone who has considered in detail the etiology of a case of shock could have any doubt whatever on the matter.

But in considering the symptomatology of these mental cases it must be obvious to everyone who gives the matter any consideration whatsoever that the manifestation of a severe psychical shock must necessarily be determined in large measure by the nature of the mind upon which the injury falls. The mental equipment of each individual consists largely of his personal experience, as interpreted and built up by himself into a system. When a man is subjected to a psychical shock one "structure" which is damaged is this systematised complex of the incidents of his previous history and the feelings and emotions associated with them, as they have been rationalised by him for his own satisfaction. It is idle to pretend, therefore, that the story of the patient's past experience can be left out of account, for it is the mind which is damaged, and the manifestations of the injury will obviously depend largely upon the individual's "mental make-up." There is still a widespread tendency (even in works on insanity and in the writings of psychologists) to speak of "hallucinations," "delusions," &c., as if they were diseases in themselves. A patient is described as "suffering from delusions" without any attempt being made to investigate the nature and genesis of these abnormal phenomena. But the formation of a delusion is an extremely complex process, usually occupying some time. Its basis is frequently a misunderstanding or set of misunderstandings which could be cleared away if detected early enough. The superficiality of speaking of a patient as merely "suffering from delusions" is clearly illustrated by Dr. H. Devine's memoir on "The Biological Significance of Delusions."[13]

But what is even more disastrous is to brand certain patients as "suicidal," and then to consign them to a single room without any real inquiry as to the meaning of this condition.[14] One of the reasons for this superficiality in treatment is the opinion (based upon a half-truth) that it makes the patient worse to talk about his hallucinations, and that one must rather try "to make him forget them." That it makes him worse to talk about them is sometimes true, but in these cases the disturbance so produced is usually temporary. On the other hand, many patients feel much better for having unburdened themselves in this manner.

*The Relation of Correct Diagnosis to Treatment.*

To suppose that without understanding the nature of and the specific reasons for the development of a hallucination one can "make the patient forget" his interpretation of a real experience, which has appealed to him day and night for weeks, or banish a delusion which is gradually becoming systematised and rationalised—i.e., intimately interwoven into the tissues of the whole of his experience—is an assumption which has no foundation in fact.

The point cannot be too much emphasised that many of these patients are quite sane, if conduct be regarded as the criterion of sanity; but they are growing afraid of the appearance of these abnormal phenomena, and take them for signs of incipient—or, more usually, perhaps of established—insanity. Two considerations arise from this—viz.: 1. Many of the troubles with which such patients are afflicted are not in any way indicative of insanity, though the patient thinks they are—e.g., the appearance of pre-sleeping hallucinations to a man who had always been accustomed, before the war, to fall asleep without such intense mental images. Telling a patient who is worrying about such hallucinations that they often occur to quite normal people, explaining to him the way in which they may be supposed to develop, and accounting for his own particular experience may be sufficient to clear away most of his mental trouble. 2. While treatment by isolation has obvious advantages in certain cases, in the particular group of patients which I am now discussing it is often dangerous, for it affords them every chance to brood upon and cultivate their initially mild derangements. As the presence of such mental phenomena is often confided to the physician only after great hesitation, and as such worrying experiences are common in cases of insomnia and other disorders, which, though troublesome, do not appear to be grave, it is possible that isolation may have serious effects in many cases in which its net results *seem to be* that the patient is merely no better.

*The Real Trauma is Psychical, not Physical.*

The majority of cases with which this communication is concerned is made up of men who, after spending months in the firing line exposed to every kind of discomfort and anxiety which modern trench warfare imposes, and having their deepest emotions repeatedly stirred up by the death of

[12] Mr. Pear tells me that according to a modern view of the emotions (that of Professor Külpe) they cannot be imaged, but are actually *reinstated* when the experience originally connected with them is recalled in memory. Whether this be generally true or not, it is obvious that thinking about a past experience which has been connected with a vivid emotion is frequently sufficient to bring about the emotion, even if in a mild form; and clearly the experiences which these soldiers recall in memory have frequently aroused emotions considerably more intense than those which occur to the average civilian.

[13] Journal of Mental Science, lxii., p. 256.

[14] Further, it is often not quite clear, when the word "suicidal" is used, whether it is intended to mean that the patient has contemplated or spoken of suicide, or has been known actually to have attempted to take his life.

comrades and the repeated reminders of their own peril, were struck down by "shell concussion." Gaupp defines this term as the general injury of the soldier in whose vicinity a shell has burst without wounding him. All direct bodily wounds produced by parts of a shell, or by objects thrown about by the explosion, are excluded from consideration in this connexion, although, of course, not infrequently the victims of "shock" are physically wounded also.

It is beyond the scope of this article to discuss to what extent slight injuries of the nervous system, or, in fact, of any part of the body, may be responsible for suggesting the form assumed by the so-called "functional" troubles with which I propose to deal. There is evidence to suggest[1] that trivial and transitory physical damage, as well as incidents in the individual's personal experience that were associated with powerful emotions, even many years previously, play the chief part in determining the form his present mental disturbance assumes. But in other cases the culminating experience at the front was of so terrible a nature as to be of primary importance, not only as the causal agent, but also as the determining factor in the production of a given symptom-complex.

It would be a great mistake to imagine that in all cases shell explosion is the exciting cause of the trouble. A considerable number of the patients have not been under fire. Some of them have not even gone to the front. Even though their experiences in the army or thoughts of what might be in store for them in the trenches may have played a considerable part in starting their trouble, I do not propose to discuss such cases here. Nor do I intend to consider the problem of what part, if any, war experiences may have played in hastening the onset of general paralysis or in stirring up mental trouble in patients who had previously been inmates of asylums.

But there is a very interesting and important class of patients which ought not to be omitted even in such a hasty survey as this. I refer to men who have stood the strain of trench life and hard fighting for months, or even more than a year, who have been wounded, "gassed," or buried, without any obvious mental trouble ensuing, and who then suddenly break down when resting.

A typical case is that of a non-commissioned officer who went through the first 11 months of the war in France and Flanders, was subjected to every kind of strain, physical, mental, and moral, which that stricken field provided; and in addition was wounded twice, "gassed" twice, and buried under a house, on all five occasions being treated in the field ambulance and then returning to the trenches. After all this experience he had not qualified for sick leave, but was granted five days' ordinary leave to return home, apparently in a good state of health. After reaching the homeland, and while waiting for a train in the railway station, he suddenly collapsed, became unconscious, and for months afterwards was the subject of severe neurasthenia. Apparently at the front the excitement and his sense of responsibility, and especially the example he felt that he should set his men, seemed to have kept him right. This stimulus removed, he broke down. The whole of his trouble seemed to be due to the dread lest, on his return to the front, the added responsibilities which would fall upon his shoulders (because most of his own officers had been killed and there would be new men to replace them) might be too much for him. His intelligence seemed (to himself) to have become numbed by his experiences, and he became conscious of the unreliability of his memory and of his inability to understand complex orders, or, as he put it, "even the newspapers." It was this that excited in him the dread lest he should be incompetent adequately to discharge the duties which would fall upon him. There was nothing of malingering or shirking in his case. There was no fear of physical injuries or of returning to the front; on the contrary, he was anxious to go back. His fear lest the possibility of his failure would be bad for the platoon was wholly due to that remarkable emotion of regimental loyalty, which comes out so strikingly in the nervous troubles of the non-commissioned officer.

This class of case demands a great deal of patient and sympathetic attention before the real cause is elicited, and then months of daily re-education to build up anew the man's confidence in himself.

*(To be concluded.)*

[1] See, for example, Roger Dupouy, "Notes Statistiques et Cliniques sur les Troubles Neuro-psychiques dans l'Armée en Temps de Guerre," Annales Medico-psychologiques, October, 1915, p. 444.

# A STANDARD METHOD OF TESTING ANTISEPTICS FOR WOUNDS, WITH SOME RESULTS.

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ONE of the most astonishing medical facts in connexion with the war is that there is no sort of agreement as to the best method of treating septic wounds. Are we to use antiseptics at all? And if so, what antiseptic? An impartial observer might come to the conclusion that the best treatment depended on the locality. In France, he might say, wounds do best without any antiseptic at all; in England, especially in the Midlands, Dakin's antiseptic is the best; whereas when we cross the Tweed there is nothing to compare with eusol. The fact is, of course, that good results are obtained by all methods (why this is the case I shall discuss in a subsequent paper), and that the skill of the surgeon is of much greater importance than the particular form of lotion he happens to be enamoured of for the moment. I think we may lay down the general proposition that if a wound is properly cleansed and properly drained at a sufficiently early period, there ought to be *no* deaths from sepsis. I am speaking exclusively of wounds as I have seen them in France. But this does not absolve us from the duty of testing all methods of treatment which may be applied subsequently to this surgical toilet of the wound, for some may give us quicker and more painless results than others, and may be easier of application in unskilled hands—a point of considerable importance under conditions such as obtain at present. It behoves us, therefore, to study very carefully all the processes which go on in a wound, and, in particular, the effects of the substances which we propose to apply thereto; and to study them, not only in relation to their action on the bacteria in the wound, but also on the cells and juices of the body itself. The latter is a matter of great difficulty, and I defer its consideration for the present.

It would appear obvious that the first essential in the study of antiseptics for this purpose would be a determination of the relative (and, if possible, absolute) potencies of the various substances which are in use, and it is very surprising to find that this has not been done. Thus I find in a recent paper the carbolic coefficient of a certain antiseptic is solemnly quoted as affording evidence of its value in wounds! Applying this test, we should be led to the belief that perchloride of mercury would sterilise wounds or the secretions from them at a dilution of 1 in 15,000 or thereabouts, whereas it is actually efficacious in a dilution about 100 times less. The carbolic acid coefficient may have a commercial value, but it has no other. More recent writers have tested the action of their antiseptic on bacteria suspended in serum. This is much better, but it is still not good enough. I know of no condition which occurs in surgical practice in which the problem is to sterilise blood serum.

In the early stage of a wound it is filled with blood and blood-clot; in the later it is filled with pus. Obviously, therefore, we should test the action of antiseptics on these substances. Now pus is a very undesirable substance to test in this way for several reasons. In the first place, there is no uniformity in its composition, either as regards the substances in solution or as regards the number of cells. And, more important, the number and nature of the organisms vary enormously, so enormously as to deprive our results of any value whatever. For example, pus containing streptococci only may be completely sterilised when mixed with an equal volume of 1 in 60 carbolic for 15 minutes, whereas if the spores of B. perfringens are present (as is usually the case) they are not necessarily killed when the pus is mixed with equal volumes of 1 in 20 carbolic and incubated at the body temperature for two days. I suggest, therefore, that unless we can find a method of preparing pus of standard composition, and containing a standard number of bacteria, we should abandon this method of testing antiseptics.

Blood presents no such difficulties. It is always at hand and always reasonably constant in composition, and we can add to it what bacteria we like and in the proportions we like. Moreover, it is the actual substance that we have to

deal with if we attempt to sterilise a wound in the earlier stages. Blood therefore appears ideal for the purpose.

In actual practice we have to prepare the blood so that it does not clot. We may use citrated blood, using the smallest amount of citrate possible so as to avoid excessive dilution, but this method fails us if we have to deal with antiseptics containing calcium salts, for these will bring about coagulation in our citrated blood. A better method, though one that is a little more troublesome, is to use "reconstituted blood," made by adding equal amounts of serum and of washed corpuscles. It is prepared as follows. Collect some blood from the finger in a Wright's capsule and allow it to clot. Collect about the same amount of blood, allowing it to drop into citrated saline; centrifugalise; decant off the clear fluid; add normal saline, stir, and centrifugalise again; again pipette off the supernatant fluid and replace it by serum in amount equal to the deposit of corpuscles, and stir. This will give you a fluid almost identical with blood, except that it is uncoagulable.

As regards the organism to be added, for general purposes streptococcus fæcalis (or the enterococcus) is all that can be desired. It is our chief enemy in wounds; it can always be obtained without any difficulty in pure culture; it grows rapidly, so that the results of tests made in the morning can be read off in the evening; and, as a small but important practical point, it readily emulsifies, so that there are no masses to resist the action of the antiseptic. Of course, for other purposes other cultures may be used. The inventor of a new antiseptic might prefer to use B. coli or B. typhosus, which are much more easily killed, whereas the opponents of all antiseptics might use the spores of B. subtilis, and find that it was almost impossible to kill them by any antiseptic; and justify his action by showing that they were very common early infections of wounds. But the streptococcus is sufficient for all ordinary purposes.

Next, as regards the number of these bacteria. This is a point of very considerable importance, and one that calls for some theoretical consideration. The death of a bacterial cell might be considered as being due to the combination of a certain number of molecules of the antiseptic with the protoplasm of the cell; and hence it might be argued that the amount of antiseptic required would be proportionate to the number of bacteria, supposing, of course, that they are suspended in an inert fluid. This is incorrect, for the reason that all bacteria in an apparently homogeneous culture are not alike. Some, perhaps, have just divided, and have not formed a protective cell-wall; others, *pace* Weismann, are decrepit from old age; whilst still others are as strong and resistant as it is possible for a bacterium to be. Hence, if we test our antiseptics on a small amount of culture we shall get varying results according to the condition of the microbes that we happen to take. We can overcome the difficulty in two ways, by using large volumes of the mixture to be tested or by making a relatively heavy inoculation of the blood we are going to use as our test fluid. This is the more convenient method, and in order to take a definite figure I have used throughout a mixture of 9 parts of blood and 1 part of an 18-hour culture of streptococcus, containing about 250,000,000 cocci per c.c. It would perhaps be a little more accurate to count the culture before use, and to add a definite number, but if the same culture is inoculated in the same way into the same amount of standard broth the results are very constant, and with the large implantation given small variations are not of much effect. This is one of the advantages of a heavy implantation, such as I recommend.

The next question concerns the time during which the antiseptic should be allowed to act. This brings us to a point of the greatest importance, but one, I think, that has hardly been adequately dealt with. All antiseptics combine with proteins in solution, or with cells, and hence bacteria lying in pus or blood are shielded from their action. This is recognised as the "quenching" action of these fluids, and it is well recognised that the effect is much greater with different antiseptics; mercury salts, for example, are quenched to an enormous extent, carbolic acid relatively but little. But this is not the whole story. The mixtures of some antiseptics and blood will become an unfavourable culture medium for bacteria, or the compound of the antiseptic and the protein will dissociate, giving a slow but continuous antiseptic action, such as is desired by some surgeons, and referred to as a "depôt-action." With other antiseptics this is not the case, and the antiseptic is either completely destroyed or, at least, rendered inert by combination with protein. Hence if we test the former on infected blood, making a mixture that is not completely sterilised in a certain period of time, say 15 minutes, and then re-test from time to time, we shall find the number of bacteria will steadily fall off. With the second group, on the other hand, there will be a transitory fall in the number of bacteria, after which they will grow, perhaps not so well as before, but under some conditions much better. Carbolic acid is an example of the first class, eusol of the second. For example, a mixture of carbolic acid and infected blood which is just not sterilised in a quarter of an hour will be completely so in one hour, whereas a mixture of eusol (undiluted) and infected blood in equal parts will show some diminution in the number of bacteria if tested after a quarter of an hour, whereas if it is re-tested after one hour abundant growth will have taken place, and it will be indistinguishable from the control. I know this will appear a hard saying to many, but I have no doubt as to its correctness; the addition of eusol in amount insufficient to cause complete destruction of the microbes has no appreciable deleterious effect on the fluid as a culture medium for what remain. I advise, therefore, that the effect of the antiseptic shall be tested after two periods of exposure, and for all practicable purposes these may be 15 minutes and 60 minutes. It might be a good plan to add a third, 2 hours.

As regards the temperature of exposure there can be no difference of opinion. The mixture of antiseptic and infected blood must be incubated at the temperature of the body, the temperature at which they are to be used in practice.

Lastly, what criterion of killing are we to adopt? There is a general idea that the planting-out subsequently to the exposure to the antiseptic must be done in a large quantity of broth, so that any antiseptic may be diluted to such an extent that it ceases to act. I think this is a theoretical point only, and the method quite unnecessary in actual practice; and it has the great objection that it only tells us whether there is or is not complete sterilisation of our test-fluid. If, on the other hand, we plate out on agar and count the colonies that grow up we can tell what dilution of antiseptic will cause partial sterilisation, and what complete; and, moreover, it avoids the possible fallacy that a single microbe which had accidentally escaped contact with the antiseptic, might vitiate our results. The theoretical objection to this method does not take into consideration the fact that most—as far as I know, all—antiseptics diffuse well through agar, so that it is not correct to argue that when a mixture such as I have described is plated out the antiseptic continues to act on the microbes for an indefinite period; it diffuses rapidly away into the substance of the agar, the microbe remaining on the surface. As a matter of fact I have made parallel observations with the two methods, and have got in most cases absolutely identical results.

The technique I have used is quick and easy. The requisites are: (1) infected blood, prepared as described above; (2) the antiseptic to be tested, in suitable dilutions; (3) a stock of capillary pipettes, such as are used in the opsonin technique; (4) large agar-plates, deep, so as to allow diffusion of the antiseptic, and surface dry; (5) a standard platinum loop about 2 millimetres in diameter; and (6) some slides which, when sterilised by flaming, are used to prepare our mixtures on.

The process is as follows. Fit an indiarubber teat to one of the pipettes, and make a grease-pencil mark on the latter about 2 inches from the tip. Then take one volume of infected blood and one volume of antiseptic and mix thoroughly on the sterile slide. Suck back about half into the pipette and seal. Take the other half into another pipette and seal it also. Place the two pipettes in the incubator, noting the time (an opsonin incubator is a great advantage). Repeat the process with the other dilutions of antiseptic, making in each case a mixture of equal parts of antiseptic and infected blood. At the end of a quarter of an hour remove the first of your dilutions, fit on an indiarubber teat, and cut off the tip of the pipette. Sterilise the end lightly in the flame, and expel the contents of the pipette on to a sterile slide, and mix thoroughly. Now take a loopful, avoiding bubbles, with the platinum loop, and spread

it out over as large a surface as possible on the agar plate. Repeat this with the other dilutions when their 15 minutes' incubation is up, and with the second series after an hour has elapsed. Incubate the plates; growth is complete in 24 hours, but the results can be read off before then.

I append some of my results:—

| Antiseptic. | 15 minutes. | | 60 minutes. | |
|---|---|---|---|---|
| | Does not kill— | Kills— | Does not kill— | Kills— |
| Carbolic acid ... ... | 1 in 70 | 1 in 60 | 1 in 60 | 1 in 50 |
| Eusol ... ... ... ... | Undiluted. | — | Undiluted. | — |
| Dakin ... ... ... ... | ,, | — | ,, | — |
| Perchloride ... ... | 1 in 100 | 1 in 80 | 1 in 100 | 1 in 80 |
| Biniodide ... ... ... | 1 in 60 | 1 in 40 | 1 in 60 | 1 in 40 |
| Iodine ... ... ... | 1 in 100 | ? | 1 in 100 | ? |
| Lysol ... ... ... ... | 1 in 40 | 1 in 30 | 1 in 150 | 1 in 120 |
| Malachite green ... | 1 in 250 | 1 in 200 | 1 in 250 | 1 in 200 |

The expression "does not kill" may be taken in most cases as implying that it causes a diminution in the number of organisms, but does not effect actual sterilisation; this dilution, therefore, may be taken as a convenient end-point if various antiseptics have to be compared. For instance, there is a tradition that eusol and Dakin's solution are several times more powerful than carbolic acid, whereas, as a matter of fact, it is seen when this method of testing is used that these substances undiluted (0·5) are about equal in effect to a 1 in 70 dilution of carbolic—in other words, carbolic acid is 70 times as strong. But this is only if they are tested at the end of a quarter of an hour; if tested at the end of one hour the chlorine preparations appear to be quite inert, the surviving bacteria having grown until, unless special methods of plating are used, they appear as abundant as in the controls. To demonstrate complete killing with eusol it is necessary to have approximately two volumes of the antiseptic to one of blood.

The killing point of iodine is not given. It is about 1 in 60, but at a dilution like this the blood is turned into a thick pasty mass, very unsuited for accurate work. Iodine is sometimes used in a dilution of 1 in 300 or 400 to "sterilise" wounds. Such a dilution is quite inert.

The results with malachite green may excite surprise; it is by far the most powerful antiseptic that I have investigated. Unfortunately its action on the living cells is even more powerful, otherwise it would be the ideal antiseptic for surgical use.

This work was carried out for the Medical Research Committee, to whom my best thanks are due.

1, Harley-street, W.

# THE TREATMENT OF HÆMORRHOIDS BY INJECTION.

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As mentioned by Mr. Arthur S. Morley in an excellent paper under this heading which appeared in THE LANCET of March 18th, I brought this subject before the profession in a paper published in the year 1888.[1] I was led to try this method as a substitute for operation by reports from certain American surgeons, amongst whom was Van Buren, professor of surgery in the Bellevue Hospital. In his work on "Diseases of the Rectum" in 1881 he makes mention of the injection of carbolic acid, and states that Professor Andrews, of St. Louis, had collected some thousands of cases treated by carbolic acid, and his conclusions, although in a general sense favourable, are not such as to tempt us to abandon safe and well-known methods without still further trial. He says: "Most of the cases thus operated on suffer a sharp temporary smarting, and a few have a terrible and prolonged agony. The majority, however, are cured without interrupting the patient's business."

[1] Brit. Med. Jour., Oct. 13th, 1888.

In spite of this somewhat unfavourable verdict I determined to try this method amongst the out-patients at St. Mark's Hospital. After an experience there of a hundred cases I came to the conclusion that with proper precautions it was quite safe, and except in one or two cases absolutely free from pain. One injection sufficed to cure some, but the majority required two or three spread over some months. It failed in one or two cases owing to prolapse of the swollen piles on the patient's way home, followed by strangulation and sloughing. This was the result of neglect in obeying the instructions given—namely, to replace the piles at once should protrusion occur. These patients were afterwards admitted and underwent the usual operation of ligature by Salmon's method.

The injection treatment having proved so satisfactory, even amongst the out-patients of a hospital which, on account of the long way many had to go in returning to their homes and to a lack of intelligence in some, is a severe test; I adopted it in private, and have continued its practice ever since with satisfaction to my patients and without an accident of any kind.

Mr. Morley uses, I see, the same injection as I do and of the same strength—viz., 20 per cent. of carbolic acid in equal parts of glycerine and water. At first I worked with a 10 per cent. solution, but found on increasing the strength that recurrences were less frequent nor was it attended with pain. I am in thorough accord with all Mr. Morley says as to the cases amenable to this treatment, the precautions necessary for a successful issue, also as to the wonderful saving of time, expense, and sometimes of pain achieved by its adoption, but my technique somewhat varies from his. It is as follows. The piles having been protruded, possibly with the aid of an enema, the patient is placed in the knee-elbow position with the buttocks opposite a good light. The parts are then sponged over with some antiseptic, as lysol and water, and the injection made through a sterilised needle. From 3 to 6 minims of the carbolic solution is injected into the centre of each pile in turn. In large piles I often inject 5 minims in two places. The piles are then smeared with vaseline or sulphate of iron ointment, and returned as soon as possible, for the injection always causes the hæmorrhoids to swell, therefore the longer they remain outside the more difficult are they to return. I advise no action of the bowels for 48 hours, and should prolapse occur in the meantime immediate replacement is essential.

Whilst he injects the piles *in situ* through an anal speculum I always get them prolapsed first and inject them whilst still protruded, returning them immediately afterwards. I am glad to hear that he injects all the piles at one sitting, for this is what I have always done. Several writers have advocated only injecting one pile at a sitting, but I cannot see any reason in this, an unnecessary loss of time it seems to me.

My reasons for having the piles extruded before injecting them are these: 1. It is much easier and one is more certain of getting into the centre of each pile. 2. If the piles are injected through a speculum a special long syringe, such as described by Mr. Morley, is necessary, whereas an ordinary hypodermic syringe suffices when the piles are prolapsed. 3. Piles which cannot be protruded should be left alone. They are to be cured by palliative means, such as local applications, enemata, attention to diet, and regulation of the bowels, &c. 4. An assistant is almost a necessity if a speculum is used, and should any bleeding occur on the withdrawal of the needle, is indispensable. I do not suppose this is as likely to take place as when the piles are prolapsed, but it might occur, when an extra pair of hands would be useful.

As I have said, a large number of cases of internal hæmorrhoids can be cured by palliative treatment—by this I do not mean the use of nutgall ointment,—but when protrusion occurs on exertion or at stool, when bleeding is sufficient to cause anæmia and troubles arising therefrom, or when the piles protrude and require replacement, some operative interference is imperative. Before any operation is undertaken it is essential that a thorough examination should be made to avoid overlooking a rectal carcinoma or other trouble high up, an accident which even to-day is constantly happening in spite of repeated warnings from others (Mr. Morley included) as well as myself. Cases fitted for injection are those of uncomplicated internal hæmorrhoids which can be protruded, then returned and kept

within the bowel. In hospital practice one finds really but few cases of uncomplicated piles, for most of those admitted for operation have in addition one or more of the following lesions—viz., external tags, fissure, hypertrophied papillæ, ulceration, and even fistula, or are of the intero-external variety. In a short paper [2] on this subject, to show how comparatively few cases are fitted for the injection treatment, I instanced an afternoon's work at St. Mark's Hospital, where I had 11 cases of piles to operate upon. Of these, 10 were complicated by other lesions—viz., 4 with fissure, 4 with external piles, 1 with an anal ulcer, and 1 with a thrombosed internal pile. In private, however, the reverse is usually the case.

I am in accord with Sir James Goodhart and one or two other writers that this method of treatment deserves to be more generally employed than it is at present, but he seems to have arrived at this conclusion from a somewhat unfortunate experience of the immediate and after-results of operation, whether by the ligature or by Whitehead's method.[3] His experience of the latter coincides with my own. Theoretically it is splendid, but practically it is far inferior to either the ligature operation or to the clamp and cautery, so that I never advise this method and I am glad to see it is rapidly falling into disrepute. But concerning the former, after an experience of over 6000 operations for hæmorrhoids, I may say that I think there is no more successful operation in the whole range of surgery than is "Salmon's" ligature operation as practised to-day. It is equally fitted to both simple and complicated cases, is devoid of risk, often but little pain is complained of, and convalescence is usually a matter of three weeks. If properly performed recurrence is so rare that it need not be taken into account. It is quite true that an anal stricture may result, but if this necessitates an operation it is generally owing to neglect or ignorance on the part of the medical attendant. If a finger is passed between the eighth and tenth days—i.e., when the ligatures have separated—any suspicion of on-coming contraction is discovered and dilatation at once regularly resorted to. In such cases at all events we can promise no further return of piles. Although I have often had to dilate about a fortnight after the operation either with a bi-valved speculum or with metal dilators, I have never had to resort to a cutting operation to cure this condition.

After the injection a few hours in bed are advisable, after which the patient can walk about and attend to his usual occupation. He has no pain and begins to get better at once. Often all bleeding and prolapse cease after the first injection, which may suffice for a cure. Latterly I have not often had to repeat the injection, and when it is necessary a year has probably elapsed and all the symptoms are ameliorated.

The great advantages of the injection treatment are: (1) No confinement to bed excepting for a few hours when possible; (2) no anæsthetic, and therefore no post-anæsthetic vomiting; (3) no pain; (4) no enforced absence from business; (5) no risk from the little operation itself and no risk of stricture or incontinence following; and (6) immediate and steadily increasing betterment.

As an advocate for this method, I cannot put it stronger than by saying that if I were the subject of uncomplicated reducible internal hæmorrhoids which called for operative interference I would select injection in preference to any of the recognised operations, always provided that it could be carried out by one who had had at least *some* experience of its simple technique.

Grosvenor-street, W.

[2] Practitioner, March, 1915.
[3] Ibid., December, 1914.

NORFOLK AND NORWICH HOSPITAL.—The report of this institution for the year 1915 shows that 2281 patients from the British Expeditionary forces were admitted to the wards, making a total of 3218 wounded who have received treatment since the commencement of the war. The death-rate for the year was only 0·8 per cent. In addition 295 men from the troops in training in the district were treated, the death-rate in this case being 2 per cent. The total number of in-patients, civilian and military, treated during the year was 5057, while the out-patients numbered 5492. The income for the year was £29,853, and the expenditure £26,437, the deficit on the accounts thus being reduced from £4073 to £823.

# METHODS OF PREPARING SPHAGNUM MOSS AS A SURGICAL DRESSING.

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THE War Dressings Supply Organisation, Edinburgh, has latterly dealt with sphagnum moss exclusively, while in many parts of the country the voluntary organisations for preparing hospital requirements have added new departments for dealing specially with it. Miss McCaul, the organiser of the admirable St. Marylebone War Hospital Supply Depôt at 2, Cavendish-square, London, was the first to take it up in England, and others have followed her example. In the near future the enterprise is likely to develop rapidly.

In the present paper I wish to draw attention (1) to the relative merits and advantages of three useful methods of preparing the moss—namely, sterilising by steam, "sublimating," and compressing; and (2) to the feasibility of carrying out these methods, including compression to a limited degree, by the use of simple appliances, and in premises easily obtained. These special methods begin after the moss has been collected, picked free of grass, leaves, sticks, &c., and dried. This work should, if possible, be carried out before it is sent to the central workrooms. In its natural state the moss contains a few non-pathogenic organisms, mostly moulds, but as other germs may obtain access to it sterilisation is necessary. Two methods have been employed:—

1. *Sterilisation by steam.*—This method, whether carried out in a high- or a low-pressure steriliser, hardens the walls of the minute tubules, and inhibits, although it does not destroy, the absorbing power. When fluid reaches the moss—especially warm fluid—the tubes are again softened and absorption takes place, although somewhat slowly. Sterilised pads of sphagnum moss, even when applied dry, have proved to be a better absorbent dressing than cotton-wool. Testimony to this effect has been received from war hospitals in all parts of the continent and Great Britain. If such pads are, however, wrung out of an antiseptic lotion just before use the full power of absorption is restored, and this simple procedure is to be recommended.

2. *Sterilisation by corrosive sublimate.*—This has been chosen as a suitable antiseptic material with which to charge the moss. It is non-volatile, relatively cheap, and very powerful. Moreover, the subliming process is easily carried out and does not at all affect absorptive power. Contrary to what might have been expected, corrosive sublimate does not become fixed, and is readily given out again so as to render antiseptic any fluid which the moss absorbs.

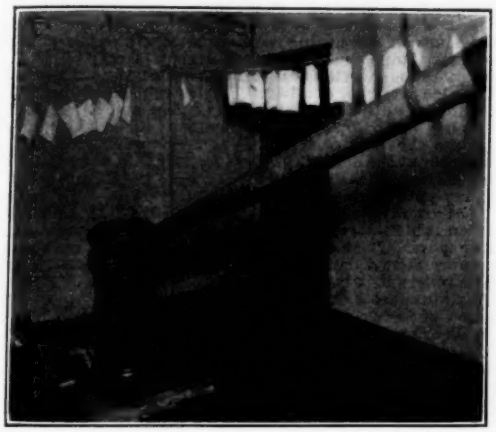
*Apparatus required for sterilising by steam.*—This method may be employed before the dressings are sent to the hospitals, in which case it will be better to obtain the use of a steam disinfector, which is a steriliser on a large scale; or it may be employed at the hospitals, when the hospital or operating theatre steriliser can be used. For the use of small hospitals and for army purposes near the front I have described [1] a simple portable low-pressure steriliser which has done good service in war hospitals at home and abroad. As some surgeons doubted the effectiveness of steam at atmospheric pressure for surgical dressings, I have had this steriliser re-tested recently. Professor James Ritchie, who kindly undertook the tests, found the results perfectly satisfactory. Copies of his report can be obtained from the makers, Messrs. J. H. Thom and Co., 67, Dundee-street, Edinburgh. The original maker has been appointed to the charge of a large factory in South Africa.

*Protection of dressings after sterilisation.*—This can be done in one or other of several ways:—

1. To enclose them in material permeable to steam but proof against the entrance of solid particles. This is the method adopted by the Edinburgh War Dressings Supply Organisation. Groups of moss dressings are sewn up in flannelette bags, which after sterilisation are not opened till they reach the hospital where they are to be used. The flannelette can be used by the nurses as lint or in many other ways.

[1] Brit. Med. Jour., Dec. 19th, 1914.

FIG. 1.



Drying room: the slow-combustion stove.

2. To enclose them in boxes or wrappings of close paper or waterproof cloth, impermeable both to steam and to dust, but left open at one or two places during exposure to the steam. By the great penetrating power of saturated steam—a power quite independent of its pressure—the dressings are thus efficiently sterilised. The apertures in the coverings having been closed with due precautions, the dressings are afterwards quite safe. This method, with various individual modifications, has been adopted by several other organisations.

*Sublimating the moss.*—The object is to charge the material with a given percentage of corrosive sublimate.

The proportion adopted for moss is that commonly added to cotton-wool—namely, 0·25 per cent.; thus 100 lb. of sublimated moss or cotton-wool would contain ¼ lb. of corrosive sublimate. Reckoning the lb. avoirdupois as 7000 grains this would give 17·5 grains of sublimate in every pound of moss. A very convenient way of obtaining these 17·5 grains is to use two of the tablets issued commercially for making a 1 in 1000 sublimate lotion in 20 oz. of water. Each tablet contains 8·75 grains of sublimate.

In order to determine the strength of the solution in which to soak the moss we must find out what will be a convenient quantity of fluid to leave in the moss after it has been wrung out of the charging solution. This will depend, among other things, on the efficiency of the squeezing apparatus. The exact quantity does not matter so long as the method adopted in making the calculation is always adhered to afterwards. When using the appliance described below it will be found quite easy by suitably adjusting the tightening screw to leave 20 oz. of water in every pound of moss. Thus, 16 oz. of dry moss will weigh 36 oz. after having been soaked and wrung. A few experiments with water should be tried in order to find how many threads of the screw have to be brought into action in order to produce this result. When this degree of compression has been attained this will be the tension required afterwards. Any number of gallons of solution can be made by adding at the rate of two tablets to each imperial pint of water. This, a 1 in 500 solution, is a very powerful antiseptic.

With regard to premises and apparatus, I have, after consultation with an architect friend, Mr. Jerdan, transformed an empty hay-loft with a wooden floor into a subliming and a drying-room, and have equipped it with the necessary appliances of a simple character so as to make sure that such a scheme is feasible at a small cost. The methods employed can be carried out in country districts with the help of a village carpenter. Modifications of such an arrangement could be easily made if the principles involved in this example are understood.

*The drying room* may be described first, since this involves structural alteration. We need a chamber the air of which can be heated to 70° or 80° F., while the air is being constantly renewed so that the accumulating vapour may be carried off.

As the heating arrangements bear a proportion to the cubic space to be heated, it may sometimes be necessary, as in my case, to run a partition across a room which is bigger than required. It occurred to me that a very simple form of partition would serve if it were composed of two air-proof surfaces with a good layer of air, as a non-conducting medium, between them. This has proved quite satisfactory. An open frame-work of wood was erected from floor to ceiling at the desired distance from one end of the large room. The light standards employed were 6 inches broad to ensure sufficient air space. The coarse canvas known by builders as "scrim" was then stretched over each side of the frame-work and nailed to the wood, and white wall-paper was pasted over the canvas. The position of the doorway through the partition was chosen so as to be close to the spot where the stove was to stand for a reason explained later.

The heating arrangements were carried out so as to utilise all the heat available from a slow-combustion stove while ensuring a constant exchange of air. At one corner of the room, now shut off by the partition, an open form of stove had been previously fixed up with a large flue running vertically upwards inside the room to the roof. This stove was removed and the flue cut off a few feet from the roof. (I had wanted it cut at a higher level, but the present arrangement—finished before I saw it—seems to work quite well.)

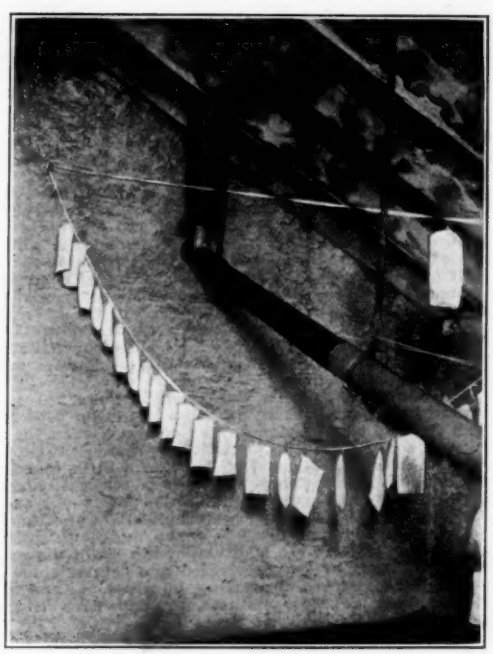
A slow-combustion stove[2] was placed on a paving stone near the door (Fig. 1) at the opposite end of the room from the site of previous stove, and the flue from the new stove, 4½ inches in diameter, was carried obliquely upwards, suspended from the roof, until it passed inside the cut end of the original flue 6½ inches in diameter. (Fig. 2.) The space thus left between the two flues serves a double purpose—viz., it obviates risk of fire at the roof and it causes a steady up-draught of vapour-laden air during the drying process.

The entrance for cold air is provided in the lower panels of the door, where a number of inch holes bored through the wood are protected with adjustable shutters. The windows are covered over with translucent tracing cloth at a little distance from the glass to establish an air-space, and as all other apertures in the room are closed the cold fresh air has only a few feet to traverse before it reaches the stove. Having been thus heated low down at one end of the room it rises and circulates until it escapes near the ceiling at the other end. The hot flue, as it passes through the room, of course greatly supplements the heating action of the stove. The floor of the drying-room measures 14 ft. 6 in. by 12 ft. The partition is 10½ ft. high and 14 ft. 6 in. long, except where the door passes through it. The ceiling extends at the full height of the partition for 4 ft., after that it slopes down to a height of 6 ft. at the outside wall of the building.

When the drying room was tested the air in the outer or subliming room was about 47° F., as shown by a thermometer hung against an outer wall—i.e., much the same as the temperature of the outer air on that day. A thermometer hung against the partition stood at 50°. In the drying

[2] Smith and Wellstood, Eclipse No. 12.

FIG. 2.



Drying room bags hanging on lines.

room a thermometer on the partition back to back with the one in the sublimating room registered 76°, and in a warmer, but not the warmest, part of the room a fourth thermometer stood at 79°. A series of sublimated bags were dried in 12 hours. Considering that sphagnum moss is very difficult to dry, and that the stove was not being burned at all fast, these results are quite satisfactory.

FIG. 3.

Sublimating room: the apparatus required.

*Sublimating room.*—This room need not be larger than suffices for the convenient working of the sublimating appliances. It should be as near as possible to the drying room, if not actually next to it. The sublimating process involves making the solution, soaking the moss in it and wringing the moss partially dry again. (Figs. 3 and 4.)

To make the solution we require a supply of the tablets of corrosive sublimate (to be had through a chemist); an enamelled or earthenware bowl and a pestle, or a piece of hard wood, for breaking them down quickly, a pail, and a pint measure for measuring out the required quantity of water.

The moss must be soaked in a wooden, enamelled, or earthenware tub, as corrosive sublimate will attack any exposed metal. For the same reason the solution should not be allowed to pass down metal drain pipes; this restriction will cause no inconvenience, since the solution squeezed out of a given quantity of moss can be used over and over again. A large oak washing-tub, 26 inches in diameter and costing 9*s.* or 10*s.*, makes as good a soaking tub as one could wish. It should stand on a "tub-chair" or "tub-stool" such as is used by cottagers; they are to be had ready made. On the upright rail or back of the tub-chair the wringer is attached, and to facilitate the work of "sublimating," the following simple woodwork should be fitted under the wringer by a carpenter. On the tub side of the wringer one shelf should slope down from the rail towards the tub. It should have a fillet of wood on each side so as to make a channel which narrows from the full width of the rollers as it passes backwards. This channel leads the solution squeezed out back into the tub. On the other side of the rail a second shelf sloping away from the tub directs the moss bags as they leave the wringer into a clothes-basket placed below. Between the two shelves a short vertical partition should rise up to prevent the solution, carried forward by the lower roller, from reaching the front shelf and wetting the moss again. Its upper edge should be about ½ inch below the line of junction between the two rollers and about ¼ inch from the surface of the lower one—not closer. The wringer I have used is known as the "Acme," costing about 24*s.* It has rubber-covered rollers, 16 inches broad. Other patterns would, no doubt, serve the purpose equally well.

For the purposes of a simple outfit there are several advantages in sublimating the moss in muslin bags rather than in loose form, which is only required when the moss is to be compressed into plates by hydraulic pressure. A medium-sized bag, about 7 × 4 inches, will be found very suitable. In the bag form the moss is very easily handled when being soaked, wrung, and dried; it is not exposed outside its bag after having been sublimated, and there are no loose fragments of moss to make a dust or catch fire in the drying room. In addition, by the use of the wringer the dried bags can be compressed to a degree which is of great practical use for packing purposes, although not so complete as that produced by expensive hydraulic machinery.

The actual work of sublimating can be done well by one person, but better by two. The bags are thoroughly soaked in the solution for a few minutes, then gently squeezed with the hands and passed through the wringer. Rubber gloves are necessary to protect the hands, as the sublimate hardens and cracks them.

A convenient and cheap way of hanging up the damp dressings in the drying room is to have a series of lines or ordinary tape hung up in suitable places. A common safety-pin is inserted first through the tape and then through the edge or corner of a bag. This is repeated at intervals of 6–8 inches until the line is full. (Figs. 1 and 2.) A good test of a bag being dry is that it crackles when gently pressed. Unless the bags were fixed to the line they would sag together at the centre, whereas for rapid drying each should hang clear of the other. When a bag is taken down the safety-pin remains to do duty for the next one.

*Compression with wringer.*—This method may be employed when it is important to reduce the bulk of the dressings for transport. The bags must be thoroughly dry in order to be compressed; a damp bag is elastic and springs out again. The rollers if damp must be dried with a clean towel. The maximum pressure having been produced by the tightening screw of the wringer each bag is passed through twice, once in its ordinary shape, a second time when folded once upon itself. This makes it into a firm easily handled piece less than half its original bulk.

The bags after having been sublimated and dried are ready for use whether in the compressed or the loose form. They must on no account be sterilised by steam. When being packed for transit they may be enclosed in either flannelette bags which have been separately sublimated or sterilised, in paper bags, preferably waterproof, or in waterproof cloth. All moss dressings being very absorbent should be protected from moisture, but this is specially true of compressed moss, which if wet would probably burst open the packing cases.

FIG. 4.

At work in the sublimating room.

The structural alterations were carried out by Messrs. John Watherston and Sons, builders, Edinburgh, at a cost of £10, exclusive of the disused stove, which, with its iron tray, originally cost about £2. The "tub-chair," costing about 7*s.*, was procured for me and altered to my design by Mr. Mitchell, 8, Lady Lawson-street, Edinburgh. Mr. A. H. Baird's photographic assistant, Mr. McConnachie, took the excellent flash-lamp photographs with which the paper is illustrated. No attempt has been made in this paper to describe the appliances kindly put at the disposal of the Edinburgh War Dressings Supply Organisation by Sir John Cowan at Messrs. Redpath, Brown, and Co.'s workshops at Albion-road, Edinburgh. The processes are exactly similar in principle but conducted on a much larger scale by the use of expensive machinery requiring steam and electricity. Sir John Cowan has kindly invited anyone practically interested in the subject to visit the works and inspect all that is being done.

Edinburgh.

# A NOTE ON THE PRECIPITIN REACTION IN TUBERCULOUS FLUIDS.

BY S. ROODHOUSE GLOYNE, M.D. LEEDS, D.P.H.,
PATHOLOGIST, CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, VICTORIA PARK, E.

SINCE Kraus [1] first noted that precipitation took place when the blood sera of animals immunised against cholera were added to the filtrate of cholera cultures a new chapter of immunity has been written. Until quite recently, however, precipitins have received attention chiefly from the standpoint of the biologist and the medical jurist (Nuttall,[2] Graham Smith and Sanger [3]). The work of Ascoli [4] on precipitins in anthrax, Isabolinsky and Patzewitsch [5] in the typhoid-coli group, Iwicki [6] in swine fever, Piras [7] in bubonic plague, and Faginoli [8] in tuberculous sputum has suggested to the writer that this precipitin or bacterio-precipitin reaction might be of some use in the diagnosis of tuberculous pleural fluids in which bacilli often cannot be found without great difficulty.

*Method.*

Various dilutions of the fluid were made in test-tubes—viz., 1 in 5, 1 in 10, 1 in 25, and 1 in 50. A row of small test-tubes (3 inches × ¼ inch), each containing 0·5 c.c. of Koch's old tuberculin, was placed in a rack. To the first of these was added 0·5 c.c. of undiluted fluid, care being taken to pour it down the side of the tube, as in doing the nitric acid test with urine (a graduated pipette is almost essential for this). To the second tube was added 0·5 c.c. of a 1 in 5 dilution of the pleural fluid, to the third a similar amount of 1 in 10 dilution, and so on. Controls were also made with (1) 0·5 c.c. saline + 0·5 c.c. tuberculin, and (2) 0·5 c.c. saline + 0·5 c.c. undiluted pleural fluid. The rack of tubes was placed in the incubator for one hour and at the end of this time a positive result was indicated by the presence of a white ring at the junction of the two fluids. Usually this precipitation took place in all dilutions tested—i.e., up to 1 in 50—though occasionally it was absent in this last dilution.

*Results.*

Four definitely tuberculous fluids were tested (three contained bacilli, and the fourth, though no bacilli were found, was verified post mortem). Of these four fluids three gave positive reactions (75 per cent.). Fourteen fluids were also tested in which the diagnosis could not be definitely proved by the finding of bacilli, but in which a lymphocyte count, high protein content, &c., strongly suggested a tuberculous origin. Of these, five (36 per cent.) gave a positive reaction, two (14 per cent.) a doubtful, and seven (50 per cent.) a negative result. Four non-tuberculous fluids used as controls were all negative.

*Conclusions.*

It would be extremely unwise to draw any very definite conclusions from the few results here recorded, but it seems possible that the test may be of some use in cases of tuberculous effusion where bacilli have not been found in the fluid. It is also probable that the results might be improved greatly with more careful technique and a more delicate antigen. If it should prove reliable, the test has at least the advantage of simplicity.

*Bibliography.*—1. R. Kraus: Wien. Klin. Wochenschr., 1897, p. 736. 2. G. H. F. Nuttall: Blood Immunity and Blood Relationship, 1904. 3 Graham Smith and F. Sanger: Journal of Hygiene, 1903. 4. Ascoli: Virchow's Archiv f. Path. Anat., vol. ccxiii., 1913. 5. Maud Isabolinsky and B. Patzewitsch: Centralbl. f. Bakt., Abt. 1, Orig., vol. lxx., 1913. 6. M. Iwicki: Ibid., vol. lxxi., 1913. 7. L. Piras, Ibid. 8. A. Faginoli: Münch. med. Wochenschr., 1913.

Victoria Park, E.

**ASYLUM WORKERS' ASSOCIATION.**—The annual general meeting of this association will be held at 11, Chandos-street, Cavendish-square, W., on Wednesday, May 17th. The chair will be taken at 3 P.M. by Sir John Jardine, Bart., M.P., president of the association. The annual report will be submitted, officers elected, and presentations will be made of medals for long and meritorious nursing service. Matters of much importance to asylum workers will be discussed, and it is hoped that there will be a large and representative gathering of members and friends of the association.

# Clinical Notes:

## MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

### IMPERFORATE HYMEN IN A BABY:

A NOTE FOR PRACTISERS OF MIDWIFERY.

BY HERBERT R. SPENCER, M.D., B.S. LOND., F.R.C.P. LOND.,
OBSTETRIC PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL, LONDON.

FOR many years I have been in the habit of examining in the course of the puerperium the vulva of the babies I have delivered, with the view of detecting abnormalities, especially of the hymen. For want of this simple examination imperforate hymen escapes notice till menstruation occurs, when the pain, distension, ill-health, and non-appearance of the menstrual discharge lead to a gynæcological examination and the condition is discovered. Unfortunately, sometimes the distension of the genital tract has involved the Fallopian tubes when the case is seen; the patient has been rendered sterile, and the risk of treatment is much increased. All the cases I have seen of this condition have recovered after evacuating the menstrual blood through an incision in the hymen; but one patient in whom hæmatosalpinx had already formed and who refused to have the tubes operated on had a severe attack of peritonitis after the evacuation of the blood from the vagina and uterus.

The object of this note is to urge practisers of midwifery to make a routine inspection of the vulva of female babies before the puerperal attendance ceases. If the hymen is found to be imperforate and bulged forwards by secretion, a snip with a pair of scissors will save the patient from a grave risk to her fertility, health, and even life. The point may be illustrated by the following case in which the malformation was discovered by an observant mother.

A baby girl 11 weeks old was brought to University College Hospital on Dec. 4th, 1915, on account of a swelling in the vulva which the mother had first noticed a fortnight previously. On inspection the labia were separated by a cystic swelling of the size of a small marble which became a little more prominent when the infant cried. It was obviously the imperforate hymen. (See illustration.) Its most prominent part was seized with mouse-tooth forceps and an elliptical piece was snipped out; about a drachm of mucus escaped from the vagina, and the hymen sank back to its normal position. A thin strand of oiled gauze was inserted into the hymeneal opening for a few days. A fortnight later the parts had a normal appearance. The mother was instructed to bring the baby to the clinic from time to time in order to make sure that the aperture did not close.

Case of imperforate hymen in a baby (natural size).

Harley-street, W.

### A CASE OF IMPERFORATE HYMEN.

BY WILLIAM ROBERTSON, M.D.GLASG.

THE patient was a strong native, otherwise without defect, 17 years of age, and had had menstrual molimina for three years. These had been severe and characterised by abdominal pain and pain in the back, but without the escape externally of any blood. Lately micturition and defæcation had been painful and obstructed. Everywhere the abdomen was soft and painless to palpation and only slightly distended. Percussion was normal. There was no fever or loss of appetite. There was perfect cessation of pain between attacks. The genitals were normal but for the thick, bulging membrane completely closing the introitus vaginæ. The urethra and

anus were more or less everted and distorted. The bulging septum, 3 inches long and 1¾ inches broad, was evidently under strong pressure and resembled generally protruding membranes. Examination per rectum discovered a great tumour obliterating the lumen of that tube.

After passing the catheter and drawing off several ounces of clear, normal urine, with a trocar and cannula the septum was perforated (not easily) and black tarry fluid was ejected a yard or two. In all about 20 ounces of this fluid was allowed to run off gently. The next day I withdrew some more. Then with a catheter in the bladder and observing the anus (for the parts were now much contracted) a free opening was made with scissors and finger in the septum, notching it all round. All the parts were normal but for the huge distension of the vagina. The operation of emptying this hæmatocolpos produced no discomfort at all, while defæcation and micturition became normal and discharge from the vagina abundant and odourless; no injection was used. One or two salt and citrate tabloids were left in the vagina.

No doubt the menstrual flow was inhibited in amount owing to the pressure experienced during the three or four years of the obstruction. Escape of blood through the fimbriæ had not taken place in this case. The tendency for the opening to close is great in these cases; every effort must therefore be used to maintain the ground gained by suitable measures.

St. Mark's, Cape Province, South Africa.

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### SECTION OF PSYCHIATRY.

*The Psychology of Rumour.*

A MEETING of this section was held on March 28th, Dr. F. W. MOTT, the President, being in the chair.

Dr. BERNARD HART read a paper entitled "The Psychology of Rumour." Rumour he defined provisionally as the transmission of a report through a succession of individuals, the product of the narratives of a series of witnesses. The reliability of a rumour depended on the accuracy with which such statements were transmitted, and ultimately upon the accuracy of the report furnished by the first member of the series, who was assumed to have seen or heard the occurrence itself. The report furnished by the actual witness of an event constituted "evidence" in the legal sense of the term, and it was clear that an investigation of its psychology must logically precede that of rumour. In former days the criterion of reliability was held to be the moral character of the witness. The question debated at that period was whether a witness was honest or dishonest, or whether he was trying to mislead with definite conscious ends in view. If such scrutiny resulted in the individual's favour all his evidence was accepted. Nowadays, however, the reliability of each individual statement was separately estimated, each possible influencing factor being taken cognisance of, including the unconscious action of political and other bias. Extensive experimental investigations into the psychology of evidence had been carried out, especially by Stern and his school. The method adopted generally consisted of submitting a predetermined experience to a number of subjects who were subsequently required to furnish a report of their experience. These reports were compared with the original experience, and the various results in that way were evaluated. Two methods of obtaining the report were employed, the narrative and the interrogatory (cross-examination). These experimental investigations completely upset the naïve views still held generally by the laity—namely, that evidence given with the best knowledge and interest was a correct reproduction of actuality; and, secondly, that evidence which was false must be due to either lying or culpable carelessness. Completely correct reports were not the rule but the exception. One investigator found in 240 reports only 2 per cent. of errorless narratives. The average reporter, when no suggestive or leading questions were employed, exhibited a coefficient of accuracy of only 75 per cent. Attestation was not found to be a guarantee of accuracy, for even in sworn testimony 10 per cent. of errors were found to be present. On increasing the time-interval between the event and the report it was found that though range and accuracy were both diminished the degree of assurance of the reporter showed a surprising constancy. Hence a person's degree of assurance and readiness to swear to the truth of his testimony depended on the character of the person rather than upon the quality of his memory. Evidence given by children should be accepted with the greatest caution, for the assurance of children was relatively high, while their capacity for reproducing what they had seen was very low. After a historical résumé of the work of previous investigators, Dr. Hart proceeded to analyse the psychological factors leading to the perversion of evidence, dividing the processes involved into perception, conservation, and reproduction, and especially dwelling upon the part played by "complexes" in the distortions affecting each of these processes. The facts of pathology were of great help, and a consideration of hallucinations, illusions, the paramnesias of alcoholics and paralytics, and particularly of the condition known as "pseudologia phantastica," showed precisely the same causes at work as in the perverted evidence of the normal man, but, of course, in a more exaggerated degree. The action of phantasy was of the greatest importance both in pathological conditions, such as hysteria, and in the production of certain rumours in normal men. Dr. Hart passed on to consider rumour as a social phenomenon and analysed its relation to the psychology of the crowd. The views of Le Bon, Conway, and Trotter were described and criticised. The peculiar susceptibility of the crowd to the action of "herd instinct" explained the ease with which non-rational opinions and beliefs were embraced by it, and hence its increased liability to the acceptance and propagation of rumours. During a great war herd instinct was stimulated to a maximum degree, and the prevalence and vitality of rumour were, for the same reason as in the case of the crowd, also greatly enhanced. Dr. Hart concluded by enumerating and classifying the various types of rumours, analysing the factors responsible for their origin, and illustrating his contentions by examples drawn from recent history.

The ensuing discussion was participated in by the PRESIDENT, Sir GEORGE SAVAGE, Mr. J. C. FLÜGEL, Professor H. W. CARR, Dr. W. H. B. STODDART, Dr. PERCY NUNN, Dr. ERNEST JONES, and Mr. J. HERBERT PARSONS.

Dr. HART briefly replied.

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ÆSCULAPIAN SOCIETY.—A meeting of this society was held on March 17th at the Metropolitan Hospital, Dr. P. Hamill, the President, being in the chair.—Dr. Stansfeld read a paper in which he considered the following applications of transfusion: 1. Immediate supply of red blood corpuscles in various types of anæmia. 2. Hæmostatic action. 3 Stimulation of blood formation. 4. Influence upon certain toxæmic conditions, such as the toxæmias of pregnancy, urticarias and bullous skin eruptions, &c. These indications, except the first, were, he said, met by the administration of serum, and the serum employed need not necessarily or always be of human origin. But against animal serum, even if proved to be as efficient as human serum, there are the objections of serum disease and the rendering of the patient anaphylactic, so that subsequent repetition of treatment may be harmful and even dangerous. Serum he considered to have advantages over whole blood in that it can be safely kept and more easily administered, while the changes which occur during the process of clotting may be of importance, and possibly they are sometimes advantageous. But in the treatment of anæmias, at least, he held it most rational to administer whole blood intravenously. The donor must be carefully selected. Isohæmagglutinins and isohæmolysins should be absent from the blood of both donor and patient; separate tests should be carried out for each pair of individuals, as even blood relationship does not necessarily afford security. The method employed could be: (1) Direct, by anastomosis, with or without a cannula; (2) indirect: (*a*) by syringe, as used by Lindemann; (*b*) by syringe and two-way tap; (*c*) with paraffin-lined receiver; (*d*) with receiver and use of an anticoagulant, such as hirudin or sodium citrate. Dr. Stansfeld then demonstrated his own apparatus, and reported the results in some of the cases treated, with special reference to pernicious anæmia.

# Reviews and Notices of Books.

## *The Positive Sciences of the Ancient Hindus.*

By BRAJENDRANATH SEAL, M.A., Ph.D. London: Longmans, Green, and Co. 1915.

ONE of the most important signs of a great awakening in India at present is seen in the fact that some of her best sons who were hitherto content to learn from oriental scholars like Sir William Jones, Colebrook, Wilson, Max Müller, and others are now diligently searching their Sanskrit literature themselves, and by their original investigations are furnishing much material to widen the scope of comparative science and thought. Dr. Brajendranath Seal, an eminent student of the literature of the East and the West, has, in his recent volume, given an insight into the early scientific achievement of the Hindu mind. In dealing with the positive sciences of the Hindus the author has largely confined himself to the millennial period, 500 B.C.–500 A.D. In the wide range of their intellectual activities the ancient Hindus excelled chiefly in philosophy, mathematics, and medicine.

1. *Philosophy.*—The main bulk of the philosophical systems of the Hindus must have been thought out about the time of Buddha, if not earlier. It is wonderful that with such poor materials and crude instruments at their disposal they should have made so much progress and anticipated so many discoveries of the last few centuries. To give one or two instances. The atomic theory of Kanada, the theory of the propagation of sound, of ether (ákáśa) in space, the statement that light and heat are but different forms of the same substance excite our admiration even at this distant date. The evolution theory of Kapilla, the originator of the oldest philosophy in the world, is remarkable for its originality and its daring conception of the oneness of the universe and of life. The ancients said: "The original Energy is one and ubiquitous, and everything therefore exists in everything else. ..... Inorganic matter, vegetable organisms and animal organisms are essentially and ultimately one so far as Mass and Energy are concerned." At the present day we are struggling in our doubt as to whether the inorganic can ever pass into the organic world, or matter into life. The ancient Hindus more than 2500 years ago believed that matter has no separate existence, but is only a manifestation of spirit, and that life is immanent in all things—thus brushing aside modern classification as artificial.

2. *Mathematics.*—Professor Monier Williams submits that "to the Hindus is due the invention of algebra and geometry and their application to astronomy." The Vaiśesika theory of motion is the nearest approach to Newton's First Law of Motion. The Vyasa-Bhashya (fifth or sixth century A.D at latest) contains the theory of potentials in a nutshell—the finest example before Newton of the exercise of scientific imagination. Dr. Seal supports the claim of Bhaskara (1150 A.D.) to be regarded as the precursor of Newton in the discovery of the differential calculus as well as its application to astronomical problems and computations.

3. *Medicine and Chemistry.*—Susruta's (of pre-Christian era) description of making caustic alkalies from the ashes of plants is a proof of the high degree of perfection the Hindus attained in scientific pharmacy at an early age. They were the first nation to employ preparations of mercury internally. The processes of calcination and sublimation were discovered by them. In the preparation of mineral acids and metallic salts, in advancing the knowledge of chemical compounds and utilising them in the service of medicine, Indians like Nágarjuna and Paranjali anticipated Paracelsus and his followers by several centuries. In chemical industries must be mentioned the three Indian discoveries which enabled India to command for so many centuries the markets of the East and the West: (*a*) the preparation of fast dyes for textile fabrics; (*b*) the extraction of the principle of indigotin from the indigo plant; (*c*) the tempering of steel in a manner worthy of advanced metallurgy. The materia medica of the Hindus is very voluminous, and many of the Indian drugs are found in the writings of Hippocrates, Dioscorides, Aetius, and Arabian works, and through them were introduced into European medicine. Clear references to the circulation of the blood, the difference between arteries and veins occur as early as in the writings of Charaka and Susruta who, however, attribute to the liver the part played by the lungs in the purification of blood. Susruta believed that the blood derived its colouring matter from the spleen. The Hindus were the first among the ancients to practise the dissection of the human body for purposes of demonstration. They used various forms of surgical instruments made from the finest steel for which India was justly famous from remote times. They performed amputations, abdominal section, lithotomy and cranial surgery, and gave as anæsthetics medicated wine, the inhalations of fumes of burning hemp, and a drug called sammohini (producer of unconsciousness).

The more that Sanskrit works are examined by competent Indian scholars, the more it will be evident how thoroughly the Hindus cultivated medical and other sciences as early as 500 B.C., between which period and 500 A.D they seemed to have reached the high-water mark in their civilisation. The author does not claim that the present volume contains a complete account of the subject. But by his original research he has broken new ground, and has therefore made a valuable contribution to the study of the scientific achievement of the ancient Hindus.

## *A Handbook of Medical Diagnosis for the Use of Practitioners and Students.*

By J. C. WILSON, A.M., M.D., Emeritus Professor of the Practice of Medicine and Clinical Medicine in the Jefferson Medical College, and Physician to its Hospital. Fourth edition, thoroughly revised. London and Philadelphia: J. B. Lippincott Company. Pp. 1441. Price 25*s*.

IN our review of the third edition of this work[1] we explained the nature and scope of the book and expressed the favourable opinion we had formed of it. The present edition has brought the subject matter fully up to date, and many necessary changes have been made. The consideration of the electrocardiograph has been transferred to its proper place among instruments of precision. The normal tracings are explained, and some of the characteristic tracings of morbid conditions are shown, such as those of extrasystoles and auricular fibrillation. The section of Diagnosis by the Röntgen Rays has been entirely rewritten by Professor W. F. Manges. Amongst the more important laboratory tests the following have been duly noted: the macroscopic agglutination test in enteric fever; the luetin test in the diagnosis of tertiary syphilis; the Abderhalden diagnosis of pregnancy; and the complement-fixation test in the diagnosis of gonorrhœa.

In the section on Diseases of the Ductless Glands the subject of dyspituitarism and Cushing's arrangement of its clinical types have been added, and attention is called to the importance of the polyglandular syndrome. Amongst other changes we may mention that the paragraphs relating to the etiology of acute poliomyelitis have been rewritten in accordance with the results of the experimental work of Flexner and his associates at the Rockefeller Institute. These observers maintain that the causative micro-organism consists of filterable globoid bodies, measuring from 0·15 to 0·3 $\mu$ in diameter, and arranged in pairs, chains, or masses. Inoculation into the brain or the sciatic nerve and peritoneal cavity of monkeys is followed after an incubation period of 48 hours to several weeks by the clinical symptoms and pathological effects characteristic of experimental poliomyelitis.

The book as a whole is essentially of a practical nature, it contains a vast amount of information concerning clinical work, and the manner in which it is arranged renders it especially suitable for purposes of reference.

[1] THE LANCET, March 30th, 1912, p. 877.

ROYAL VICTORIA HOSPITAL, BELFAST.—At the annual meeting in connexion with this hospital, held on March 31st, the President, Lady Pirrie, in the chair, it was reported that 3189 new intern patients were received into the wards during 1915, and 29,145 new extern cases were treated. Among the ward cases were a large number of soldiers and sailors from active service. The total revenue for the year was £18,302, against £17,522 in 1914, and the disbursements £20,459, against £18,168 in the previous year, the difference being £2291. Seven of the members of the staff are serving their country at the front, two (Mr. A. Fullerton and Professor Sinclair) with the temporary rank of colonel

# A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

## COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION:

*Summary of Reports for Month ending Oct. 31st, 1915.*

| Place. | Rainfall in milli-metres. | Metric tons of deposit per square kilometre during month. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Insoluble matter. | | | Soluble matter. | | Total solids. | Included in soluble matter. | | |
| | | Tar. | Carbonaceous other than tar. | Ash. | Loss on ignition. | Ash. | | Sulphate as ($SO_4$). | Chlorine (Cl). | Ammonia ($NH_3$). |
| **ENGLAND—** | | | | | | | | | | |
| Birmingham, Central [1] | — | — | — | — | — | — | — | — | — | — |
| ,, Aston | 44 | 0·08 | 2·51 | 6·71 | 1·00 | 4·20 | 14·50 | 2·00 | 0·30 | 0·07 |
| ,, S.W. | 49 | 0·04 | 1·00 | 3·06 | 0·80 | 3·50 | 8·40 | 1·70 | 0·20 | 0·50 |
| Bolton | 58 | 0·13 | 4·05 | 8·66 | 1·63 | 5·81 | 20·28 | 2·55 | 1·17 | 0·49 |
| Exeter | 136 | 0·03 | 1·41 | 1·94 | 1·63 | 4·68 | 9·69 | 3·81 | 0·82 | 0·04 |
| Kingston-upon-Hull | 23 | 0·17 | 3·83 | 4·73 | 4·06 | 7·57 | 20·36 | 3·21 | 1·27 | 0·02 |
| Leicester | 28 | 0·08 | 2·15 | 2·99 | 2·35 | 2·79 | 10·35 | 1·37 | 0·31 | 0·10 |
| Liverpool | 55 | 0·16 | 2·53 | 4·33 | 3·43 | 3·98 | 14·43 | 2·58 | 0·90 | 0·21 |
| London— | | | | | | | | | | |
| Meteorological Office | 53 | 0·21 | 1·67 | 7·18 | 5·60 | 11·20 | 26·00 | 5·11 | 2·09 | 0·24 |
| Embankment Gardens | 29 | 0·55 | 4·57 | 8·60 | 3·30 | 8·77 | 25·79 | 3·48 | 1·04 | 0·04 |
| Finsbury Park | 39 | 0·15 | 1·04 | 3·65 | 0·44 | 6·87 | 12·15 | 1·70 | 0·44 | 0·03 |
| Ravenscourt Park | 31 | 0·07 | 1·32 | 3·66 | 1·06 | 4·04 | 10·15 | 1·76 | 0·31 | 0·07 |
| Southwark Park | 27 | 0·04 | 3·28 | 6·19 | 0·88 | 3·94 | 14·33 | 1·87 | 0·33 | 0·07 |
| Wandsworth Common | 39 | 0·05 | 0·61 | 1·41 | 0·55 | 3·03 | 5·65 | 1·11 | 0·25 | 0·03 |
| Victoria Park | 40 | 0·05 | 1·05 | 2·52 | 2·37 | 9·96 | 15·95 | 5·00 | 0·37 | 0·10 |
| Golden Lane | 55 | 0·05 | 2·84 | 3·42 | 2·42 | 3·74 | 12·47 | 2·89 | 0·51 | 0·33 |
| Manchester— | | | | | | | | | | |
| Ancoats Hospital | 27 | 0·11 | 5·60 | 11·91 | 2·48 | 8·64 | 28·74 | 4·03 | 1·13 | 0·10 |
| Bowdon | 34 | 0·01 | 0·48 | 2·14 | 0·67 | 2·44 | 5·74 | 1·14 | 0·43 | 0·05 |
| Cheadle [2] | — | — | — | — | — | — | — | — | — | — |
| Davyhulme | 38 | 0·03 | 0·98 | 4·13 | 1·79 | 3·64 | 10·57 | 1·34 | 0·83 | 0·11 |
| Fallowfield [3] | — | — | — | — | — | — | — | — | — | — |
| Moss-side | 38 | 0·12 | 1·90 | 6·25 | 1·44 | 5·42 | 15·13 | 2·61 | 1·08 | 0·08 |
| Philips Park | 30 | 0·06 | 3·42 | 9·74 | 1·84 | 7·21 | 22·27 | 2·12 | 1·10 | 0·06 |
| Queen's Park | 32 | 0·10 | 1·92 | 6·50 | 1·42 | 6·71 | 16·65 | 2·03 | 1·25 | 0·04 |
| School of Technology | 30 | 0·18 | 4·73 | 4·75 | 1·38 | 5·13 | 16·17 | 2·16 | 1·05 | 0·06 |
| Whitefield | 36 | 0·06 | 1·61 | 4·96 | 2·29 | 4·80 | 13·71 | 1·90 | 1·03 | 0·05 |
| Newcastle-on-Tyne | 41 | 0·37 | 8·65 | 16·85 | 2·23 | 6·52 | 34·62 | 3·35 | 0·29 | 0·17 |
| Oldham | 42 | 0·22 | 7·97 | 16·24 | 3·04 | 5·40 | 32·87 | 2·82 | 1·09 | 0·23 |
| York | 8 | 0·04 | 1·02 | 1·85 | 0·28 | 0·56 | 3·75 | 0·34 | 0·07 | 0·01 |
| **SCOTLAND—** | | | | | | | | | | |
| Coatbridge | 59 | 0·09 | 1·74 | 3·68 | 1·26 | 2·18 | 8·95 | 1·44 | 0·28 | 0·14 |
| Greenock | 80 | 0·23 | 2·89 | 5·06 | 2·70 | 4·34 | 15·01 | 2·11 | 0·16 | 0·19 |
| Leith | 53 | 0·05 | 1·15 | 3·47 | 1·91 | 3·40 | 9·98 | 1·38 | 0·20 | 0·21 |

[1] Results unreliable; gauge tampered with. [2] No returns. [3] No returns.

"Tar" includes all matter insoluble in water but soluble in $CS_2$. "Carbonaceous" includes all combustible matter insoluble in water and in $CS_2$. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall.

The public health authorities concerned in the supervision of these examinations were as follows: Dr. J. Robertson, Medical Officer of Health of Birmingham; Dr. J. E. Gould, Medical Officer of Health of Bolton; Mr. H. Lloyd Parry, Town Clerk, Exeter; Mr. A. R. Tankard, Public Analyst, Kingston-upon-Hull; C. K. Millard, D.Sc., Leicester; Dr. E. W. Hope, Medical Officer of Health of Liverpool; The Director of THE LANCET Laboratory, Meteorological Office, London; Mr. J. Ollis, Chief Officer, Public Control Department, London County Council, London; Dr. W. J. Howarth, Medical Officer of Health of London; Mr. W. Osborne Thorpe, Engineer, Urban District Council, Malvern; Mr. J. Warrington, Secretary, Air Pollution Advisory Board, Manchester; Dr. H. Kerr, Medical Officer of Health of Newcastle-on-Tyne; Dr. J. B. Wilkinson, Medical Officer of Health of Oldham; Professor W. P. Wynne, The University, Sheffield; Dr. E. M. Smith, Medical Officer of Health of York; Mr. A. G. Dutch, Sanitary Inspector, Coatbridge; Mr. J. Devine, Sanitary Inspector, Greenock; Mr. Thomas Bishop, Sanitary Inspector, Leith; and Mr. W. W. Kelso, Sanitary Inspector, Paisley.

The analytical work involved in these returns was undertaken respectively by J. F. Liverseege, F.I.C., Birmingham; Harry Hurst, B.Sc., F.I.C., Bolton; F. Southerden, B.Sc., F.I.C., Exeter; A. R. Tankard, F.I.C., Kingston-upon-Hull; S. F. Burford, Leicester; W. H. Roberts, M.Sc., F.I.C., Liverpool; S. A. Vasey, F.I.C., Director, THE LANCET Laboratory (London Meteorological Office collections); J. H. Coste, F.I.C. (Embankment Gardens, Finsbury Park, Ravenscourt Park, Southwark Park, Wandsworth Common, Victoria Park collections), London; F. L. Teed, D.Sc., Golden-lane, London, E.C.; C. C. Duncan, F.I.C., Malvern; E. Knecht, Ph.D., M.Sc., Manchester collections; J. T. Dunn, D.Sc., Newcastle-on-Tyne; Samuel Urmson, Oldham; Professor W. P. Wynne, Sheffield collections; S. H. Davies, M.Sc., York; Messrs. R. R. Tatlock and Thomson, Coatbridge; J. W. Biggart, F.I.C., Greenock; A. Scott Dodd, B.Sc., F.I.C., Leith and Paisley.

## ATMOSPHERIC POLLUTION IN SHEFFIELD.

WE have received a copy of a report to the Health Committee of the Sheffield city council on the results obtained by the chemical investigation of rain-water collected at various sites in the city area. It is signed by Professor W. Palmer Wynne of the University, and his notes on the general scheme are of interest. The returns occur with those from other places in the monthly reports on atmospheric pollution which, as they are issued, appear regularly in our columns. Professor Wynne points out that these analytical data, in so far as they bear on the problem of atmospheric pollution, do not furnish any clue to the amount of impurity in the atmosphere, except when rain is falling. In other words, no account of the pollution during rainless days is rendered by the rain gauge, and it cannot be assumed that the impurity in the air on a rainless day is going to stay there until rain comes. However, the results are of comparative interest in relation to the amount of rainfall. In many respects, and in spite of a reputation for a smoky atmosphere, Sheffield's atmosphere, according to the report, compares not unfavourably with that of other great manufacturing centres.

CITY OF LONDON LYING-IN HOSPITAL.—At a time when the infant life of the country is a specially important asset it is satisfactory to know that there has been practically no falling off in the subscriptions to the City of London Lying-in Hospital, and that the donations have risen from £420 to £674; but we regret to learn from the report for 1915 that there has been a falling off in nearly all the other items of income. The total income amounted to £6609, being £153 less than in 1914. During the year 1100 women were admitted into the hospital, and of these 1011 were delivered, being 44 less than in the previous year, when the highest number delivered in any year—1055—was recorded. The 1011 women gave birth to 1025 children—viz., 524 boys and 501 girls. In the out-patient department 651 women were delivered at their own homes, as against 849 in 1914. Nine women had twins, 15 children were stillborn, and 10 children died.

# THE LANCET.

*LONDON: SATURDAY, APRIL 15, 1916.*


## The Wittenberg Camp.

THIS war has produced some terrible stories, and some of the most terrible, after having been declared to be unimaginable and therefore concocted, have proved to be true. To this category belongs the unspeakable record of the crimes committed by the Germans upon their prisoners of war at Wittenberg; rumours of these crimes had got abroad and were declared to be false because incredible, but the authenticated account leaves the rumours behind. The account is contained in a report by the Government Committee on the Treatment by the Enemy of British Prisoners of War; the report is signed by Mr. Justice YOUNGER, and is based upon evidence collected from prisoners of war repatriated from Wittenberg, and especially from information supplied by the following three officers of the Royal Army Medical Corps, Major PRIESTLEY, Captain VIDAL, and Captain LAUDER. The terrible episode upon which these officers gave their testimony was an epidemic of typhus fever, which broke out at the end of 1914 in the Wittenberg Camp for prisoners of war; whereupon the German staff, medical as well as military, fled from the camp, and from December, 1914, to August, 1915, no direct communication was held between the prisoners and their guards. All supplies for the wretched prisoners were for the future pushed into the camp over chutes, and the food for the hospital—and such food, and such a hospital!—was run in on a trolley over a rail worked by winches. No medical attention was provided by the staff, but in February, 1915, six English medical officers, who were prisoners, were sent to the camp to do the work which the German doctors, to their unspeakable shame, dare not do. Of these six medical men three died, and three have at last been able to tell their tale.

The story as set out in the report is a surprising record of blackguardism. The Germans confined from 15,000 to 17,000 prisoners within wire entanglements upon 10 acres of ground. A large quantity of these prisoners were Russians and were already infected with typhus fever, and the infection was spread among the other prisoners by lice, with which all the prisoners swarmed, for no washing facilities were provided and no soap was supplied. Six weeks after the vile cowardice of the German medical staff in running away from their wretched charges, six prisoner medical officers were deported to the camp, but their strenuous efforts were supported in no way by the director of the German camp. What it was humanly possible to do they did, and their efforts testify to their extraordinary courage, self-sacrifice, and resource. Of the six medical men only three survived, and we hope that their devoted services will not be forgotten. They found the improvised hospital of the camp practically without appliances of any sort. There were no proper bedding and no mattresses; dressings, bandages, and stimulants were wanting; the absence of soap prevented either patients or garments or furniture from being washed. The German authorities received representations of these things with refusal to ameliorate them, and the inhabitants of the locality came down to the encampment to laugh at the coffins as they were removed from the enclosure.

This horrible story will have been read by most of our readers, and makes it necessary that the medical men of other countries than Germany should decide into what sort of relations they propose to enter with the medical profession of Germany when this war is over. Medicine knows no geographical limits or racial distinctions; it is the most essential expression of human service to all human beings. But the doctors of other countries will not sit in friendly conclave with the medical representatives of a country where the responsibilities of human service are regarded as at Wittenberg. The doctors of other countries do not run away from disease; nor would it strike other populations that the bodies of the deserted dead were a good subject for jeers. The doctors of Germany will not for some time be welcome at international gatherings of medicine.

## Credulity in War Time.

PSYCHOLOGISTS have often pointed out the antithesis which exists between emotion and intellect. A man in a passion has to a great extent lost his critical faculty; he cannot form a cool judgment; if his situation calls for action of an important character he takes the advice of his friends as to the proper course for him to pursue. A state of war is one in which powerful emotions are raised among the people; and however much we may admire the enthusiasm and driving energy thus derived, we have also from time to time to deplore the failure of calm discrimination, and to admit the readiness to believe in every kind of myth that has a pleasant effect upon the feelings. A crowd is at all times more susceptible to emotion and less endowed with critical faculties than an individual, and it is inevitable that a period of war, which knits a nation together, should also be a period of credulity. In another column will be found a communication on the psychology of rumour made by Dr. BERNARD HART to the Section of Psychiatry of the Royal Society of Medicine. Dr. HART shows that in war-time the prevalence and vitality of rumours are greatly enhanced. At the beginning of the war this truth manifested itself with surprising intensity—the passage of a Russian army through England and the appearance of the angels at Mons, are only flagrant examples of beliefs entertained by large numbers of people, not only without a scrap of reliable evidence in their favour, but in direct opposition to all that calm thought would have suggested. And as war goes on the willingness to swallow

impossible narratives and to put faith in absurd theories does not abate, while it is possible that real mischief may be done if the tendency increases.

A long article appeared recently in the *Daily Chronicle*, entitled "Supernatural Communications in War Time," written by M. MAURICE MAETERLINCK, in which that eminent and charming writer set forth the doctrine that it is possible for civilians at home to get into touch with their friends and relations fighting abroad, by some means of spiritual clairvoyance. It is, we think, singularly unfortunate that a doctrine so much calculated to raise false hopes and to culminate in disappointment and unhappiness should be published with an air of authority by a newspaper of very wide circulation, whose deservedly high reputation only serves to reinforce the error among uninformed minds. M. MAETERLINCK starts out with a statement that is simply untrue, and, indeed, he does not seem to believe his own words. He says that the existence of the faculty of clairvoyance "is no longer seriously denied by anyone who has given some little attention to metaphysics; and it is easily verified by those who will take the necessary trouble." Yet he points out that the medium finds it easier to relate the past than to foretell the future. Efforts in the latter direction appear to have failed. "Errors are almost the rule." "There is scarcely any accuracy of vision." When mediums attempt to predict a general event such as the result of a war, an epidemic, or an earthquake "they almost invariably deceive themselves and us." Moreover, even about the present their statements are not found by M. MAETERLINCK to be accurate. A medium may say that she sees the subject of inquiry "ailing slightly, lying in a deck-chair in a garden of such and such a kind, surrounded by certain flowers and petting a dog of a certain size and breed. On inquiring you will find that all these details are strictly correct, with this exception, that at that precise moment this person, who ordinarily spends his time in the garden, was inside his house or calling on a neighbour." Yet instead of writing down this medium as a fraud, M. MAETERLINCK thinks it worth while to suggest that the scene has occurred at some previous part of the individual's life. Of course it has; we must nearly all have found ourselves taking part in the identical scene at some time of our lives. Such an episode should not be presented to the public as evidence of the spiritual prowess of the medium, even if M. MAETERLINCK does not consider the medium to be condemned by the circumstance that the subject was in point of fact altogether differently engaged from the way in which clairvoyance alleged. M. MAETERLINCK tells us how the medium can give information about a British prisoner in Germany, can describe the fortress or huts in which he is interned, and the appearance of the camp; can do much, in fact, except give the name of the place. Yet this, unfortunately, is the one point that can be immediately tested. The medium tells us with the most marvellous precision all about the things which we cannot verify; she is totally nonplussed by one item, the one which would furnish us with testimony of her veracity. M. MAETERLINCK does not seem to see that she thus becomes unworthy of any notice. He offers one instance of successful clairvoyance of many that he could enumerate if the *Daily Chronicle* were the place to become communicative, the uncivil implication being that his readers could not appreciate the evidence if it was offered. Belief in fetishism he takes as the level of their intelligence, for one of M. MAETERLINCK'S most competent mediums can tell all about a person from inspecting an object which has been handled or touched by that person. The object, he presumes, absorbs like a sponge a portion of the spirit of the person who touched it, and remains in constant communication with him. This leads us straight back to the fetishism of primitive peoples. The uneducated cannot distinguish between a thing and its properties: they think that a part of a man's personality passes into his possessions. We have heard of the African native who would not walk by a river lest a crocodile should seize his shadow on the waters. We have heard of the Chinook who would not tell his name lest it should be stolen. It is very common to find objections in native tribes to being photographed, on the ground that the photographer henceforward possesses some part of the personality of the sitter. Such hopeless mental confusion is natural to the savage. But the British public can hardly have sunk to so gross a form of superstition.

Finally, M. MAETERLINCK, admitting that all which he has written sounds incredible, says that it is hardly more so than radio-activity or the Hertzian waves and other scientific phenomena. Such an argument might be made to justify any absurd folly; for is it not the case that the wonders of nature far exceed those that the most imaginative human mind can invent? Our spiritualists, by using this analogy, merely disclose the barrenness of their own minds, their ignorance of the infinite beauties and marvels of nature. If their minds really need mysteries and wonders let them study science. How ignorant of natural phenomena they must be who set up for our admiration the crude imaginings of their unwholesome minds. And the particular form of credulity which M. MAETERLINCK, a really great litterateur, has elected to advocate has a larger significance and a larger importance than that of merely misleading unfortunate persons as to the fate of their relatives fighting abroad. It is typical of that dangerous mental softness that will not face a fact, and insists upon entertaining not the beliefs that are true but the beliefs that are agreeable. To live in a fool's paradise is fatal, especially when we are at war. To know and recognise the truth, whatever it may be, is the essential attribute of a virile mind: to seek the truth is the highest task of the philosopher. How is it that a great and popular newspaper can lend its authority to M. MAETERLINCK'S rubbish? It almost seems as though it were easier to obtain prominence in our daily newspapers for the lucubrations of charlatanry than for true and useful scientific doctrines. The misfortunes of Europe have brought us back once more to medieval conditions in the realm of action. Let them not

drag us also into the barbarities of medieval thought. At this juncture in our history we have not only to act but to think like men. For there can be little doubt that in the last analysis our existence as a powerful and independent empire depends upon our readiness to accept scientific ways of thinking, to recognise and admit truth on all occasions, and to harden our minds by that intellectual discipline which is no less essential to our welfare than is physical discipline to the soldier.

# Annotations.

"Ne quid nimis."

## ACUTE POLIOMYELITIS.

IN another column we publish an abstract of the Lumleian lectures on acute poliomyelitis delivered before the Royal College of Physicians of London by Dr. Frederick E. Batten. The first lecture was devoted to the epidemiology and pathology of the disease, the second to the experimental researches which had been carried out, and the third to the clinical consideration of the subject. The lecturer's idea throughout was not to introduce new theories, but to discuss in a way that would be valuable, both by clearness and inclusiveness, a condition which is obscure in many of its manifestations and which has proved particularly dangerous on occasion to our troops. The clinical features were particularly well described. Dr. Batten adopted the grouping suggested by Wickman, which is based on an anatomical distribution—viz., (1) the spinal form; (2) the bulbar, pontine, and mid-brain form; (3) the cerebral form; (4) the cerebellar form; (5) the neuritic form; (6) the meningitic form; (7) the abortive form. This classification indicates the variety of symptoms which may occur. In the lectures attention was drawn to the phenomena which present themselves when different muscles are involved. One variety consists in the paralysis of the neck muscles without affection of the bulb or shoulder muscles. Dr. Batten pointed out that weakness of the neck muscles makes it impossible for the patient to walk, owing to the power of balancing being lost. The meningitic form is one of the most interesting groups, and the meningitis is indicated by the presence of lymphocytic cells in the cerebro-spinal fluid, but the symptoms frequently lead to errors in diagnosis. The remarks on treatment are well worthy of attention. Rest was particularly insisted on as the most important factor. The principles by which physiological rest can be secured to the muscles were considered, and Dr. Batten emphasised the importance of placing the paralysed muscles into the "zero position." This can be carried out by placing the paralysed limb or limbs in celluloid splints, accurately fitted to the limb. These splints were first introduced into this country by Mr. H. J. Gauvain. They are light but firm, and their efficacy in giving support to diseased joints is familiar to those who have seen them in use at Sir William Treloar's Cripples' Home at Alton. In poliomyelitis, whilst keeping the paralysed muscles in a normal zero position, other muscles which may have been more or less affected must be re-educated to resume their normal function. If this treatment is adopted at an early stage of the disease, not only will recovery be facilitated, but deformities will in a great measure be prevented. These lectures should spread the knowledge of acute poliomyelitis in a valuable way.

## THE DIAGNOSIS BETWEEN POWDER EMBEDDED IN THE SKIN AND LEAD PARTICLES.

THE present trench warfare has been attended with a great many wounds due to the débris of projectiles of high velocity which are broken up on striking the parapets. When a bullet strikes a hard stone the greater part of the force is converted into heat, the lead is fused and, with the débris of the sheath, is projected in fine droplets, which the resistance of the air makes smaller and smaller. At a meeting of the Académie de Médecine of Paris M. Ducellier, radiologist of the Saint-Roch Hospital, Nice, has called attention to the importance of the resulting injuries. The particles are so small that their power of penetration is slight, and they are easily arrested by the clothes. Hence the wounds are mostly on the face or hands. They usually take the form of several small wounds surrounded by a bluish more or less circular zone according to the greater or lesser obliquity of the skin to the line of flight. The discolouration is due to penetration of the skin by small particles of lead, and these may be mistaken for powder granules. The diagnosis is important, because if the wound is in the hand the question may arise whether the soldier has injured himself voluntarily—a serious offence. The circumstances of the wounding will usually enable a correct conclusion to be drawn, but for absolute certainty it is necessary to demonstrate the nature of the particles embedded in the skin. If they are powder, a firearm has been discharged at close quarters; if lead, all possibility of voluntary mutilation is excluded. Removal of a piece of skin and chemical tests would settle the question, but this method may not be available at the front. The X rays, which are always at hand, thanks to the motor-cars equipped with the apparatus, will at once solve the problem. When the discolouration is due to powder the plate shows normal transparency of the tissues, but when the spots are clearly visible they are due to particles of the projectile. But it is necessary to take a plate and not trust to radioscopy. The screen has not the sensitiveness of the plate, and fails to show metallic particles of some size.

## COMPULSORY TREATMENT OF VENEREAL DISEASE.

IN the Majority Report of the Swedish Royal Commission on Venereal Disease a scheme has been outlined with the object of rendering treatment of venereal disease compulsory under certain conditions. In this scheme these four main principles have been kept in view: 1. It must secure the sanitary objects aimed at, it must not give the public a false sense of security against the dangers of immorality, and it must not frighten patients from seeking medical treatment voluntarily. 2. It must give satisfaction morally. Thus, it must not weaken the defences against immorality or interfere with the development of public morals in the right direction. 3. It must not discriminate between the various classes of society, the greatest possible equality of treatment for the two sexes must be secured, and opportunities for arbitrary action by its administration must be reduced to a minimum. 4. It must not curtail personal liberty unnecessarily

it must not give an opening to spies and blackmailers, and it must not entail great administrative machinery or expense. On the basis of these principles measures have been proposed giving the sanitary authorities powers to make treatment compulsory for patients notified by medical men as being a source of infection, for persons convicted under the vagrancy law of professional immorality, and for persons accused of certain crimes and suspected of being infected with venereal disease. Under the present system of regulation in Sweden it is impossible to take summary measures except in the case of the professional prostitute. According to the Commission's scheme, not only would the "whole-time" prostitute be subject to compulsory treatment, but this could also be prescribed for the occasional prostitute and other women infected with venereal disease, as well as for men known to be sources of infection. It is also pointed out in this Majority Report that under the present system the syphilitic "whole-time" prostitute is kept in hospital for treatment only as long as there are infectious manifestations of the disease. According to the Commission's scheme, such a patient would be kept under observation as long as the disease was infectious, whether there were any demonstrable symptoms or not. In a Minority Report, signed by Professor Johansson and Hrr. Westerberg, compulsory measures against infectious venereal disease are described as superfluous and unjust. The signatories say that the majority's proposals entail notification of venereal disease and tracking down sources of infection, steps which they consider harmful as well as ineffective. In defence of this opinion they point out that at present many infectious patients seek medical aid voluntarily, whereas compulsory treatment would prejudice hospitals and doctors with this class of patient, who would shun them. Further, it is urged, the Commission's scheme is involved, and open to the abuses of circumlocution, mistakes of identity, and false notification. In the campaign against venereal disease compulsory measures should be directed rather against institutions such as brothels, which are perfect hot-beds of infection, than against the individual. Thus, it is evident that, as with so many other proposals by the Swedish Royal Commission on Venereal Disease,[1] this particular scheme is regarded with disfavour in certain quarters.

## THE VALUE OF SCIENTIFIC DENTISTRY.

Dr. F. J. Waldo, coroner for the City of London and the Borough of Southwark, embodies a variety of matter in his annual report of inquests held by him during the past year, and his remarks on the value of scientific dentistry are very timely. The connexion between dentistry and inquests is not at first apparent, but a coroner holds inquiries upon occasions when evidence pointing to starvation gives reason to suspect an "unnatural" death, and Dr. Waldo refers in his report to examples of deaths due to lack of teeth or to the presence of septic stumps only—of death, that is to say, which might have been averted by the dentist's care and by the supply of artificial teeth. He relates also that a report of an inquest upon a case of this class, held by him, was read with a most gratifying result by Mr. Edwin Tate, who by a gift of £5000 thereupon inaugurated a fund to be administered at St. Bartholomew's Hospital for the provision of artificial teeth for necessitous and deserving out-patients. We congratulate Mr. Tate upon his generosity and the coroner upon having prompted him to set an example which we hope may be followed by others. Well-to-do persons, who so easily procure for themselves artificial teeth when those fail with which nature endowed them, do not realise that for their poorer neighbours inability to masticate their food implies not merely discomfort, but loss of health, and even in extreme cases of life itself. No doubt other hospitals would gladly profit by similar gifts to that which St. Bartholomew's Hospital has received. Although artificial teeth may be too expensive gifts for hospitals to provide for their patients out of their ordinary funds, a sum of not many hundred pounds per annum, earmarked for that purpose by their givers, would supply a substantial number of sets to patients for whom it is too late to recommend conservative measures in dentistry.

[1] THE LANCET, March 18th, 1916, p. 629.

## THE CONSERVATION OF INFANT LIFE IN SCOTLAND.

THE infantile death-rate in Scotland is about the same now as it was 60 years ago. This matter of serious national importance receives attention in a report by Mr. D. W. Kemp to the Convention of the Royal Burghs of Scotland,[1] which ancient and honourable body represents two-thirds of the population. A chart, prepared by Dr. James C. Dunlop, shows a curve of the infant mortality in Scotland for the period 1855–1915. In the report is emphasised this most unsatisfactory and disappointing state of affairs, especially considering the large sums of money spent in public health, in dealing with slums and housing, the improved food and milk supplies, as well as the advances in medical and obstetrical science. Mr. Kemp adds: "But for the numerous voluntary agencies working for the welfare of infancy during the last decade, the death-rate would probably have been much higher." In the report are reproduced from THE LANCET[2] a leading article and a letter concerning the preservation of infant life. Our correspondent's idea, it will be remembered, was to enlist the active sympathies of the public, the personal interest in a particular baby being stimulated by monthly bulletins or otherwise. We trust that Mr. Kemp's report, which is to be circulated all over Scotland, will accelerate the efforts being made to reduce the deaths of infants and to promote child and maternity welfare.

## POISONING BY DAFFODIL BULBS.

AT a recent meeting of the Pharmaceutical Society in Edinburgh a paper was read by Mr. W. G. McNab in which he described the uncomfortable consequences of the error of a cook who, it would seem, was sadly ignorant of the botany of the kitchen garden. Briefly, the cook, in concocting a *soupe à l'oignon*, had mistaken the bulbs of the daffodil for those of the onion, and neither the appearance of the bulbs nor her tearless eyes while preparing them for the pot told her that anything was wrong. The soup was served, and every member of the family, cook as well, experienced symptoms of nausea followed by violent vomiting

[1] Third Report on Infant Mortality in Scotland, and the Executive Meetings of the National Association for the Prevention of Infant Mortality and the Welfare of Infancy, by D. W. Kemp (Assessor for Dornoch), Representative of the Royal Burghs Convention to the National Association.

[2] THE LANCET, Jan. 29th, 1916.

and diarrhœa. Thereafter on three consecutive occasions when the family had soup for dinner the same thing occurred. It was not until an investigation revealed the facts that the box in which the domestic onions were stored had long been empty and that the cook had been drawing her supplies from an adjacent box containing garden bulbs that the cause of the trouble was discovered. Judging from like experiences related in the course of the discussion which followed the reading of the paper, similar mistakes are not uncommon, and it might therefore be wise if medical practitioners called in to diagnose obscure cases of family sickness would cross-examine the cook. Daffodil bulbs contain an alkaloid the action of which, according to authorities, varies as to whether the alkaloid is extracted from the flowering bulb or from the bulb after flowering. Thus in the former case the alkaloid produces dryness of the mouth, checks cutaneous secretion, dilates the pupil of the eye, quickens the pulse, and slows and weakens the heart contractions. On the other hand, the alkaloid from the bulbs after flowering produces copious salivation, increases cutaneous secretion, contracts the pupil of the eye, produces slight relaxation of the pulse, and slight faintness and nausea. Apparently there is no record of a case of fatal poisoning from daffodil bulbs.

## INFANTILE SYPHILIS: AN ANALYSIS OF 100 CASES.

Dr. B. S. Veeder and Dr. P. C. Jeans bring out some instructive points in relation to infantile syphilis in a paper in the *American Journal of Diseases of Children* for March. Of congenital syphilis they recognise four types: fœtal syphilis includes the majority of abortions and premature births due to syphilis; infantile syphilis includes cases in which the child is born apparently healthy but develops signs of syphilis within a year; late or tardy syphilis embraces those in which signs of syphilis develop after infancy; and in the latent type are grouped those children, apparently healthy, but in whom the Wassermann reaction is positive. It is with the second group only that this paper deals. These infants are taken to the medical practitioner because of either coryza or rash in the large majority of cases, occasionally for epiphysitis. Rash was present in 77 per cent., rhinitis in 74 per cent.; the two are not always associated. Epiphysitis occurred in 14 cases. The spleen was enlarged in 82, and it is stated that, where this is the case in a child under 6 months old, in absence of any exudative diathesis, syphilis is probable. In 60 the weight was below normal, but in 10 it was above. The Wassermann reaction was positive in 92·6 per cent. In 81–85 per cent. the symptoms began in the first two months. As regards prognosis, this is bad. There is a mortality of 40 per cent. in spite of all treatment. All the deaths occur in the first six months of life. It is significant that treatment appears to have no effect, though neosalvarsan given intravenously (a proceeding which seems to be well borne) into the external jugular vein causes rapid disappearance of the rhinitis. Nutrition has the greatest influence upon the chances of survival. This is strikingly brought out by a comparison of infants breast-fed and those artificially fed. Of 42 infants who were breast-fed for a period longer than three months only 3 died (7·1 per cent.), whereas of 17 breast-fed only for a month 9 died (52·9 per cent.).

## A DIETETIC VIEW OF THE TAX ON AERATED WATERS.

WATER in its aerated form is clearly a luxury, and the addition of carbonic acid gas to water justifies a tax according to this view. The tax will diminish the consumption of all aerated beverages, and a return to the use of plain water will ensue. For the whole community, teetotal or otherwise, a beverage that is not carbonated, and which is therefore not taxed, will be cheaper. But the physiological action of a water briskly effervescing with carbonic acid gas is different from that of a plain water or of a water which is not effervescent, and a general return to plain water therefore raises some dietetic questions. Apart from æsthetic considerations, questions, for example, of its acid attractiveness, carbonated water exerts, according to some observers, a specific effect in the stomach. Aerated beverages in most cases promote the chemical processes of digestion by causing an earlier and more abundant secretion of gastric juice, while the carbonic acid gas may also act as a stimulant to the movements of the stomach, and thus aid the mechanical process of digestion. Possibly the effervescent action of the carbonated water causes a circulation or distribution of the food particles. In England the introduction of cheap soda-water was largely responsible for making whisky a popular alcoholic beverage, and incidentally the public were unconsciously basing their preference of aerated water to still water on the agreeable effects on digestion which in so many cases an aerated beverage produces. It is well known, moreover, that an effervescing alcoholic beverage is a more rapidly diffusible stimulant than a still fluid. It is important, however, to remember that the duty on table water is designed to apply not to the manufacture of these waters but to their sale, which means that the tax is charged separately on the quantity contained in a separate bottle, the term "bottle" including any reservoir. Premises for manufacture will require to be licensed under a fee. For domestic purposes, however, the manufacture of soda-water as in a seltzogene or similar vessel, with which most of us are familiar, will be neither taxed nor is it intended that a licence charge be imposed. The definition for "table waters" makes this clear, for they are described as "any aerated waters and any beverages sold or kept for sale in bottles other than (*a*) any liquor for retail sale of which an Excise licence is required; and (*b*) syrups or other liquors intended to be consumed in a diluted form."

## THE ARMY MEDICAL CIVILIAN RESERVE.

Mr. Rickard W. Lloyd has brought to our attention a letter written by the late Mr. C. B. Keetley 11 years ago which is of considerable topical interest at the present moment. The letter was addressed to a certain number of medical men entirely upon Mr. Keetley's own responsibility, but he had assured himself that the Director-General of the Army Medical Staff (then, as now, Sir Alfred Keogh) would view with the greatest approval the formation of a Voluntary Medical Reserve. Mr. Keetley's straightforward letter is characteristic of the man.

The Director-General of the Royal Army Medical Corps has pointed out that, in the case of a great war, he would be the only member of that Corps left in the kingdom. There would be no trained Medical Reserve. There would be the Volunteer medical officers, but they would have their own

duties. Lord Roberts said on Saturday, speaking of the army in general: "There is a great deal more necessary, and that is that, in addition to the army and reserve forces, there should be a great potential reserve of the whole nation." The Director-General is most anxious to see a great potential reserve of the medical men of the nation. It seems to me that this could be furnished without any great sacrifice on anyone's part. Medical men possess medical knowledge to begin with. They have not to learn to shoot. From a soldiering point of view, therefore, a doctor is comparable to a gamekeeper, or, better still, to a Volunteer who has made rifle-shooting his hobby. All the medical man needs is instruction in the official and routine duties of a medical officer in charge of a hospital or of a body of troops. I am assured by the highest authorities that this could be given in a dozen lessons or less. No drill is required. I think that in the case of a large number of medical men who are not officers of Volunteers, that it would not ask too much of their patriotism for them to be willing to receive these lessons. All medical men who thus qualified themselves could be organised into a corps with strictly local subdivisions. *In the case of a great war no member of this corps should be expected to do army medical duties at any great distance from his own locality, or without proper payment.* No expense in uniform would be required. ..... Among the thousands of members of such a reserve medical corps there would be, when war broke out, some hundreds who would be both qualified and willing to serve abroad—in fact, to act as a reserve to the Royal Army Medical Corps abroad. Without the organisation I have indicated, and without the lessons in time of peace, these hundreds might be willing, but they would be very imperfectly qualified.

PS.—I am writing this entirely on my own responsibility, but not without first assuring myself by consultation with the highest army medical authorities that the scheme would be received with favour. The enthusiasm and energy of the present Director-General of the Royal Army Medical Corps are well known, and his intense desire to establish a proper reserve. In fact, his views with regard to the Royal Army Medical Corps are precisely those of Lord Roberts with regard to the army in general. I am sure you will agree with me that the country is fortunate in possessing such men at this juncture, and that it is our duty as individuals to second their efforts.

Mr. Herbert Chambers, writing from Goldhawk-road, Hammersmith, tells us that Mr. Keetley's letter resulted in 40 men in the Hammersmith district of London interesting themselves in the movement, who at the termination of the course had mostly obtained a rough idea of regimental officers' duties. "The Territorial scheme," he adds, "was shortly after introduced and completely smothered individual effort."

## THE INFLUENCE OF COLD UPON THE TRICHINOUS LARVÆ.

PREVIOUS to the research conducted by Mr. B. H. Ransom, the author of a pamphlet dealing with this subject,[1] it had been generally accepted that the larvæ of trichinella spiralis were very resistant to cold. Extended investigation was made into the matter. Quantities of trichinous meat varying in weight from a few grammes to nearly 400 lb. were frozen and kept for periods varying from a few minutes to 57 days at various temperatures below the freezing point of water. The meat on removal from the freezer was generally allowed to thaw slowly at ordinary house temperatures. Frozen meat after thawing was artificially digested and examined microscopically on a warm stage and the number of inactive and active trichinæ were recorded. Trichinous meat from the same carcass as the frozen meat was used for controlling the effects of the process of digestion. Another portion of frozen meat, after thawing, was fed to test animals, in most cases white or hooded rats. Unfrozen meat from the same carcass was fed to control test animals. The test animals as they died, or after about a month if they lived so long, were examined for trichinæ. About 30,000 trichinæ were examined from artificially digested frozen and unfrozen meat, and over 500 test animals and control animals were fed and examined. A considerable portion of the trichinæ in meat exposed to a temperature of about 15° F. for periods of 23 days or less survive and are quite lively after thawing, but such meat frequently fails to infect test animals. Some of the trichinæ in meat exposed to a temperature of about 10° for periods of 57 days or less generally survive. A temperature of 10° is more injurious to trichinæ than a temperature of 15°, but like the latter its effects are uncertain, although meat exposed to it for 14 days or longer has generally failed to produce infestation. No infestation has been produced by trichinous meat exposed to a temperature of about 10° for 20 days or longer. Temperatures of 5° F. or lower profoundly affect the vitality of trichinæ. Only a very small proportion survive an exposure of more than five days. Artificial digestion of trichinous meat has no apparent effect upon the activity or structure of the trichinæ. In the practical application of refrigeration as a means of destroying the vitality of trichinæ meat should be refrigerated at a temperature not higher than 5° F. for not less than 20 days, a period which allows a probable margin of safety of nearly 10 days. The employment of higher temperatures of refrigeration as a means of destroying the vitality of trichinæ is not justified in the light of our present knowledge, because of the uncertainty of the effects of such temperatures. Whether temperatures higher than 5° F. may be safely employed by lengthening the period of refrigeration remains to be determined.

[1] Effects of Refrigeration upon Larvæ of Trichinella Spiralis, by B. H. Ransom, Chief of the Zoological Division, Bureau of Animal Industry, Journal of Agricultural Research, Department of Agriculture, Washington, U.S.A.

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WE regret to announce the death of Sir Alexander Russell Simpson, professor of midwifery and diseases of women in the University of Edinburgh, which occurred on April 6th in Edinburgh as the result of an accident. An obituary notice will appear in a later issue.

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THE death has also occurred, we are sorry to say, of Colonel Arthur E. J. Barker, A.M.S., professor of surgery and clinical surgery in University College of London, and surgeon to University College Hospital, who died while discharging military duties.

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Mr. Hugh M. Rigby, M.S. Lond., F.R.C.S. Eng., has been appointed a consulting surgeon to His Majesty's Forces in France with the rank of Colonel, A.M.S.

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THE library and offices of the Royal Society of Medicine will be closed from Thursday, April 20th, to Tuesday, April 25th, both days inclusive.

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ROYAL INSTITUTION.—Among the day lectures to be delivered after Easter the following are announced:—Professor Charles S. Sherrington (two): Harvey and Pavloff. Dr. T. M. Lowry (two): Optical Research and Chemical Progress. Sir Ray Lankester (three): Flints and Flint Implements. Professor W. H. Bragg (two): X Rays and Crystals—(1) New Methods of Research; (2) First Results and their Applications (the Tyndall lectures). The Friday evening discourses will be resumed on May 5th. Sir J. Mackenzie Davidson: Electrical Methods in Surgical Advance. Professor Charles G. Barkla: X Rays. Mr. Ernest Clarke: Eyesight and the War.

# REPORT OF THE COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER OF LONDON FOR 1914.

## HEALTH OF THE METROPOLIS IN WAR-TIME.

THE annual report of Dr. W. H. Hamer for the year 1914 has recently appeared.[1] A third year's experience of the policy of coördination as applied to the administration of public health and elementary education in London materially strengthens the confidence we have before expressed in the principle involved.[2] We should be prepared to advocate its extension to other communities of smaller but still sufficient size provided that suitable administrative arrangements could be secured. Careful reading of the volume before us conveys the impression that, in spite of the distracting influence of the European War, the highest possible efficiency has been maintained throughout the year in those departments of the Council with which our profession is concerned. In no respect have the interests of public health or education been sacrificed to existing emergencies.

The arrangement of subject matter adopted in the two preceding reports has been continued in the present volume, the contents of which may be indicated as follows: Part I. discusses the question of metropolitan public health generally, with particular allusion to the degree in which it has been affected by the war. Part II. gives account of the advisory action of the medical officer in his capacity as school medical officer; it also furnishes particulars of the administration of the Council as the education authority for London.

### PART I.—*Public Health.*

The efficiency of sanitary administration in London must have been severely tested by the conditions of war obtaining since the autumn of 1914. On the outbreak of hostilities many of the borough medical officers of health were accepted for service in connexion with the housing and feeding of troops, the maintenance of sanitary conditions, and the adoption of precautions against disease. These services are rendered under military direction and are additional to the duties ordinarily performed by officers of a sanitary authority. It is gratifying to learn that in spite of the unprecedented conditions referred to, and notwithstanding the ever-pressing necessity of meeting exceptional demands for medical service, a satisfactory amount of preventive work has been accomplished by the sanitary authorities and their officers, central as well as local.

*Vital statistics.—Movement of population.*—Commenting on the vital statistics of London the medical officer again invites attention to the question of population movement as affecting the age constitution of the community. In the annual report for 1912 evidence was presented showing the persistence of a distinct outward flow from London of young married persons and their families. Again, in the report for 1913 the importance of local migration was shown, firstly by comparing London with the provinces in respect to age constitution of their population, and subsequently by similarly comparing the areas north and south of the Thames. It was further pointed out that London attracts females at the ages of 25–35 in greater numbers than males. The striking differences of the figures given accentuate the necessity of still bearing in mind the changes in age constitution of the community which exercise so marked an influence in London.[3] In particular regard should be had to the effect of these changes upon the rates of births, marriages, and deaths, as well as upon the rates of infantile mortality.

*Antenatal and postnatal mortality.*—In further discussing the question of loss of life among infants, the medical officer discriminates between the group of causes attributable to antenatal (or natal) conditions, including premature birth, atrophy, and marasmus on the one hand, and the group of postnatal causes constituting the large category of "general diseases" on the other. After eliminating, for specified reasons, the deaths from diarrhœa and the common infectious diseases, and dividing the last ten years into quinquennial periods, it is indicated that the prenatal group of causes shows a relative increase from 48·2 per cent. in the first period to 51·4 per cent. in the second, whilst the postnatal group shows a considerable decline throughout. A further remarkable point respecting the assignation of cause of death is this, that the death-rate from premature birth has increased from 10·3 per 1000 in 1871–5 to 18·7 in 1906–10, whilst the death-rate from atrophy and debility has correspondingly diminished. It appears doubtful, however, whether premature births are relatively more frequent now than formerly; and it is possible that the discrepancy is capable of explanation by assuming considerable changes of fashion in nomenclature. With reference to the happily persistent decline of infant mortality, it is evident that its explanation might be sought not in any local but in some common influence operating over a wide area. The effect of migration upon changes in the social status of present-day parents as compared with those of 50 years ago must certainly be regarded as influencing infantile mortality. The decline in that mortality has resulted in part from definite improvement in "environment," and in part from interchange between London and the country generally of certain elements of the population. To this latter factor almost as much importance should be attached as to the former.

*Tuberculous disease: provisions for treatment.*—The scheme of the Council for the treatment of tuberculosis has been approved by the Local Government Board.[4] In formulating this scheme the Council was animated by the desire to ensure the coöperation of all existing medical agencies, so as to provide that the patient's progress should be supervised from the date of his attack until the completion of treatment, and that he should receive medical care even beyond that period. An advisory board has been appointed consisting of representatives from the great hospitals, whose duty consists in securing uniformity of standard in the selection of patients for treatment—a rota of physicians being nominated by them for the examination of exceptional cases. Considerable difficulty was at first encountered in obtaining suitable residential accommodation, and that difficulty has been accentuated since the outbreak of war. But in spite of this the Council has succeeded in keeping pace with the demand, and in the case of children has prevented the accumulation of a long "waiting list." They have secured accommodation for residential treatment to the extent of 160 hospital beds, 240 beds in sanatoriums, and 150 children's beds; and negotiations have been opened with the Metropolitan Asylums Board for further accommodation in future.

*Meningeal and abdominal tuberculosis: question of diagnosis.*—In his annual report for 1913 the Registrar-General comments on the evidence that abdominal tuberculosis causes a relatively low mortality among children in London, whilst meningeal tuberculosis is more destructive there than elsewhere. He raises the question whether this is in accordance with fact. It is common knowledge that the mortality from abdominal tuberculosis tends to rise in years of exceptional fatality from diarrhœa, and it is credible that this may be due to the erroneous return as tuberculous of some deaths not really caused by that infection. If the deaths so certified now are not all due to tubercle, this would probably have been still oftener the case 30 years ago, which would help to account for the existing low mortality in London, where there is reason to believe that death certification is at its best. With the object of ascertaining whether any reduction of this mortality has followed the County Council's treatment of tuberculous milk Dr. Hamer has prepared an instructive diagram, from which it appears that in Manchester where action against tuberculous milk was commenced nine years previous to 1908, when similar action was initiated in London, the decline of tuberculous mortality is actually less marked than in the metropolis. This behaviour of the rates lends support to the theory that the fall experienced is mainly due to improvements in medical diagnosis and consequently in death certification. The medical officer considers it premature to ascribe the recent decline of tuberculous mortality among children to the promotion of special measures for the protection of the milk-supply against contamination.

*Scarlet fever: etiological considerations.*—During the year London experienced a considerable increase of scarlet fever, which formed part of a general prevalence throughout the country. The London attacks were more numerous than in

[1] King and Sons, Westminster. Pp. 155. Price 2*s.* 6*d.*
[2] THE LANCET, April 18th, 1914, p. 1137.
[3] THE LANCET, April 3rd, 1915, p. 720.

[4] See Report of the London County Council for 1913, vol. iii., pp. 226, 227.

any year since 1907. In the report for 1911, pp. 62, 63, special study was recorded of the seasonal prevalence of fleas in relation to the spread of scarlet fever, and the subject is again discussed in the present report. Respecting the etiology of this disease certain facts have been established. We know, for example, that scarlet fever is wont to exhibit major curves of prevalence in which the interval between crest and crest is from 6 to 8 years. Accordingly a wave-crest was due to appear about the year 1914, and, as a matter of fact, such a wave-crest did actually then occur. Many years ago Dr. G. B. Longstaff pointed out that scarlet fever displays a remarkable inverse correlation with rainfall—dry years, and particularly cycles of dry years, corresponding to cycles of excessive incidence of this disease. The subject is still under official consideration. Whilst admitting that the curves of scarlet fever and flea prevalence tend to rise from a low level at the beginning of a six-year period to a high level at its end, Dr. Hamer deprecates the formation of a precise conclusion until the results can be examined for a longer series of years.

*Typhoid fever: changes of nomenclature.*—Early in 1914 a "heightened prevalence" of typhoid fever was reported in London. The increase was limited to the spring, and it is noteworthy that there was practically complete absence of the usual rise in the autumn of that year. A somewhat wide distribution of attacks was revealed by inquiry, which once more gave rise to suspicion that food infection was the cause of mischief. Information was collected respecting 400 out of 789 attacks notified, from which it appears that in nearly half the cases infection was conveyed by means of fish or molluscs, coming from distant polluted foreshores or from remote estuarial waters. Criticising certain of the latest theories of causation advanced by Koch and his opponents, Dr. Hamer points out in what respects they severally fail to account for the recent spread of typhoid. The history of the disease in London indicates that typhoid particularly affects that section of the population which buys and eats what has been termed "trash" in the streets. Sometimes purchasers of "haporths" of fried fish, sometimes eaters of mussels, more rarely of cockles, are chiefly affected. On the outbreak of hostilities fears were expressed lest London should be infected by soldiers or refugees coming from the seat of war. That these fears were groundless has been proved by subsequent experience. While the low rate of typhoid fever incidence in London is highly satisfactory, it is probable that to some extent this is due to alterations in nomenclature. It is noteworthy that during the last 14 years in which deaths from appendicitis have been separately tabulated, the mortality from that disease has steadily increased, and at present the deaths thus certified are three times as numerous as those from typhoid fever. The fact is important, in this connexion, that the cases notified as typhoid in recent years are by no means always examples of that disease. The Metropolitan Asylums Board reports show that the proportion of cases erroneously certified before admission as typhoid has never been lower than 17 per cent., whilst in three recent years it has varied from 37·9 to 40·5. There can be no doubt, therefore, that considerable alteration of fashion has taken place as regards nomenclature in the case of typhoid-like diseases. If due allowance be made for this fact the estimate of the extent of the decline accredited to typhoid fever in London will have to be somewhat modified.

*Cerebro-spinal fever and influenza.*—The number of cases of cerebro-spinal meningitis notified in 1914 was the lowest on record. Of the 73 cases reported only 61 could be regarded as definitely due to that disease. In the same period 58 deaths were registered as from cerebro-spinal or post-basic meningitis, including a number of fatal cases that were not certified as such until after death. In 1907 an outburst of cerebro-spinal meningitis occurred in Glasgow in the course of which 1238 cases with 838 deaths were reported, whilst in Belfast some 725 cases with 548 deaths were recorded during the 18 months ended June, 1908. Sporadic cases of cerebro-spinal meningitis appear at certain seasons of each year in all large communities, and this endemic form when occurring in young persons is usually designated post-basal meningitis. In regard to infectivity and severity, the features of this type of the disease differ materially from those of the epidemic variety. The epidemic prevalence of the disease occurs in waves of varying intensity, and is governed by a complexity of conditions as yet imperfectly understood. During the previous seven years cerebro-spinal meningitis had not assumed epidemic proportions, but towards the end of 1914 cases were reported from various parts of the country, and in the early months of the following year the disease may be said to have assumed an almost epidemic character in London. Evidence of the increasing prevalence of the disease was primarily derived from the Naval Depôt at the Crystal Palace. During the first ten months of 1914 only scattered cases of cerebro-spinal meningitis were notified in London; then at the end of the year came an outburst of influenza with pneumonic complications, and close on its heels the prevalence of cerebro-spinal fever. With a view of throwing light on the possible relationship between these two conditions the services of the borough medical officers of health were enlisted. As a result of their investigations it appears that during the period from Jan. 1st to May 22nd, 1915, when influenza was prevalent, 523 cases of cerebro-spinal fever were notified. Among 462 of these cases there was a history of influenza in 37 instances, and in 27 of these the patient was said to have suffered from influenza within a week of the onset of cerebro-spinal fever. Catarrh, sore throat, and "colds" were noted as having affected 70 patients prior to attack by cerebro-spinal fever, and 10 patients had recently suffered from pneumonia. Contact with cases of influenza colds was noted in 66 instances. Dr. Hamer next proceeds to examine the main question, whether the number of cases of cerebro-spinal fever giving a history of recent attack by, or contact with, influenza was greater than might have been expected as a matter of chance. His provisional conclusion is that some definite relation probably exists between the two diseases. "This presumption" is, in his opinion, "materially strengthened when regard is paid to the large number of cases of cerebro-spinal fever giving a history of contact with sufferers from influenza."

*(To be concluded.)*

## THE SERVICES.

### ROYAL ARMY MEDICAL CORPS.

THE undermentioned Majors to be temporary Lieutenant-Colonels whilst commanding Casualty Clearing Stations:—W. D. C. Kelly and D. L. Harding, D.S.O.

The undermentioned are granted temporary rank whilst commanding Field Ambulances:—To be Lieutenant-Colonel: Brevet Lieutenant-Colonel FitzG. G. FitzGerald, Major B. F. Wingate, Major M. F. Grant, Major G. A. K. H. Reed, Major G. H. Richard, and Major J. Fairbairn. To be Major: Captain V. T. Carruthers.

Major (temporary Lieutenant-Colonel) T. S. Dudding relinquishes his temporary rank on ceasing to command a field ambulance.

Major (temporary Lieutenant-Colonel) William M. B. Sparkes relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services of a Division.

Temporary Major E. W. H. Groves, Captain, R.A.M.C. (T.F.), relinquishes his temporary commission.

Temporary Major A. Lingard to be temporary Lieutenant-Colonel.

Captain W. R. O'Farrell is restored to the establishment.

To be temporary Captains: H. B. Maunsell, J. R. Currie, and A. P. Chown (C.A.M.C.).

The undermentioned temporary Lieutenants to be temporary Captains: E. S. Moorhead, A. Riley, H. A. Haig, A. W. Matthew, H. T. L. Roberts, A. M. Pryce, F. W. Wesley, G. A. Birnie, W. C. C. Kirkwood, J. H. Wilkinson, E. H. Rainey, J. A. D. Radcliffe, L. D. Shaw, W. W. Scott, A. J. A. Peters, T. G. Brown, R. Slaney, C. F. Drew, W. T. Smith, A. MacKintosh, T. Ferguson, C. J. Scholtz, B. W. Gonin, O. S. Kellett, W. E. P. Phillips, F. S. Turner, M. J. Fraser, H. Owen, H. R. Brown, J. R. Mitchell, H. Dyer, W. A. Rees, E. Rogerson, R. B. Lucas, W. H. Godby, N. E. Packer, C. O. Donovan, R. B. Carter, E. P. Blashki, J. L. Digby, N. Mc. A. Gregg, N. W. Broughton, S. W. G. Ratcliff, C. Farranridge, A. W. Raymond, W. H. Allen, T. J. J. Curran, F. A. L'Estrange, H. Dudley, J. M. McLachlan, H. R. Souper, C. Burnham, H. E. Clatterbuck, S. Williams, R. E. F. Pearse, W. N. Soden, J. W. Robertson, N. Smith, J. B. Hunter, A. Renshaw, H. J. Penny, J. J. O'Neill, B. W. Wibberley, F. P. Noble, G. R. Pennant, T. W. David, G. W. Parry, A. R. Gunn, A. R. Finn, R. S. Morshead, G. M. C. Powell, G. W. FitzHenry, T. H. Whittington, C. O'Brien, and W. Garton.

The undermentioned temporary Honorary Lieutenants to be Temporary Lieutenants: W. H. Marshall and E. I. Davies.

The undermentioned to be temporary Lieutenants: G. E. Dodson, W. J. May, G. B. King, J. N. Glaister, W. A. Curry, D. S. Taylor, V. Wallace, W. J. Tulloch, C. J. McCarthy, C. Cairnie, W. K. Bell, C. V. Kebbell, R. Orr, C. M. Eadie, D. Rees, and W. F. Cornwall.

The undermentioned temporary Lieutenants relinquish their commissions: L. R. G. de Glanville, H. S. Vivian, C. R. Wright, J. W. Farrar, D. F. Finlay, L. B. Daly, T. C. Last, R. N. Thomson, J. R. Wortabet, H. H. R. Bayley, L. W. K. Scargill, A. E. Goldie, N. D. Mackay, E. H. Kenny, K. G. Colquhoun, C. T. Stephen, H. C. Colville, A. Pryde, F. W. Harrowell, S. Caplan, P. A. M. Green, J. A. Brown, H. J. Moon, L. M. Piggott, and E. Greene.

SPECIAL RESERVE OF OFFICERS.

*Royal Army Medical Corps.*

Cadet Sergeant-Major G. Morris and Cadet Sergeant J. A. Crawford, Edinburgh University Contingent Officers Training Corps, to be Lieutenants (on probation).

Temporary Lieutenant O. D. Price, from the Royal Army Medical Corps, to be Lieutenant. Ex-Cadet Sergeant E. W. Mann, Belfast University Contingent, Officers Training Corps, to be Lieutenant (on probation).

TERRITORIAL FORCE.

*Army Medical Service.*

Lieutenant-Colonel A. D. Sharp, from West Riding Field Ambulance, to be Assistant Director, Medical Services, West Riding Division, with the temporary rank of Colonel.

Lieutenant-Colonel D. Smart, from the Sanitary Service, to be Assistant Director, Medical Services, West Lancs. Division, with the temporary rank of Colonel.

Lieutenant-Colonel L. J. Blandford, from the Sanitary Service, to be Assistant Director, Medical Services, 1st Mounted Division, with the temporary rank of Colonel.

*Royal Army Medical Corps.*

London Sanitary Company: Lieutenant A. M. Brown to be Captain. D. J. Peebles to be Lieutenant.

South Midland Casualty Clearing Station: Captain E. Whichells, from South Midland Field Ambulance, to be Captain.

South Wales Mounted Brigade Field Ambulance: J. O. Cuthbertson to be Lieutenant.

Northumbrian Field Ambulance: V. J. White to be Lieutenant.

Southern General Hospital: The undermentioned Majors to be Lieutenant-Colonels: W. Collier and R. H. A. Whitelocke. The undermentioned Captains to be Majors: E. C. Bevers, H. E. Counsell, J. C. R. Freeborn, A. G. Gibson, W. J. Turrell, and A. T. Waterhouse.

*Attached to Units other than Medical Units.*—Captain J. C. Denvir, from Yorks Mounted Brigade Field Ambulance, to be Captain. J. S. Hopwood to be Lieutenant.

# VITAL STATISTICS.

## HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8486 births and 5868 deaths were registered during the week ended Saturday, April 8th. The annual rate of mortality in these towns, which in the three preceding weeks had been 18·7, 17·2, and 17·7 per 1000 of their aggregate civil population in 1915, was again 17·7 per 1000 in the week under notice. Among the several towns the death-rate ranged from 5·1 in Enfield, 7·5 in Southend-on-Sea, 7·7 in Ilford, 7·9 in Smethwick, and 9·1 in Willesden and in Tottenham, to 23·8 in Hull, 26·1 in Cambridge, 27·6 in Rochdale, 27·8 in Burnley, and 31·3 in Sunderland.

The 5868 deaths from all causes were 9 fewer than in the previous week, and included 381 which were referred to the principal epidemic diseases, against numbers rising from 345 to 420 in the four preceding weeks. Of these 381 deaths, 141 resulted from whooping-cough, 121 from measles, 50 from infantile diarrhœal diseases, 45 from diphtheria, 15 from scarlet fever, 8 from enteric fever, and 1 from small-pox. The annual death-rate from these diseases was equal to 1·1, or 0·2 per 1000 less than that recorded in the previous week. The deaths attributed to whooping-cough, which had been 93, 137, and 134 in the three preceding weeks, rose to 141, and caused the highest annual death-rates of 1·3 in Birmingham and in Manchester, 1·4 in Warrington and in Sunderland, 1·5 in Burnley, 1·9 in Cambridge, and 2·0 in York. The deaths referred to measles, which had been 127, 115, and 122 in the three preceding weeks, numbered 121 in the week under notice; the highest death-rates from this cause were 2·8 in Swansea, 3·9 in Newport (Mon.), and 7·5 in Rochdale. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 68, 65, and 66 in the three preceding weeks, fell to 50, and included 16 in London, 7 in Manchester, and 3 in Nottingham. The deaths attributed to diphtheria, which had been 61, 53, and 71 in the three preceding weeks, fell to 45, of which 12 occurred in London, 4 in Liverpool, and 3 each in West Ham, Bootle, and St. Helens. The deaths referred to scarlet fever, which had been 19, 12, and 20 in the three preceding weeks, fell to 15, and included 2 each in London, Stockport, and Leeds. The 8 deaths from enteric fever, of which 2 were registered in Hull, were slightly below the weekly average in the last quarter. The fatal case of small-pox belonged to South Shields.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 2257 to 1768 in the 11 preceding weeks, rose to 1778 on Saturday last; 252 new cases were admitted during the week, against 193, 210, and 214 in the three preceding weeks. These hospitals also contained on Saturday last 1425 cases of diphtheria, 243 of whooping-cough, 132 of measles, and 42 of enteric fever, but not one of small-pox. The 1481 deaths from all causes in London were 16 in excess of the number in the previous week, and corresponded to an annual death-rate of 17·9 per 1000 of the civil population. The deaths referred to diseases of the respiratory system, which had been 405, 337, and 328 in the three preceding weeks, further fell to 326 in the week under notice.

Of the 5868 deaths from all causes in the 96 towns, 194 resulted from violence, 458 were the subject of coroners' inquests, and 1673 occurred in public institutions. The causes of 60, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, and in 69 other smaller towns. Of the 60 uncertified causes, 12 were registered in Liverpool, 11 in Birmingham, 5 in South Shields, 4 each in Gateshead and Tynemouth, and 3 each in London and Manchester.

## HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of last year, 1140 births and 890 deaths were registered during the week ended Saturday, April 1st. The annual rate of mortality in these towns, which had been 18·7, 20·7, and 19·9 per 1000 in the three preceding weeks, fell to 19·6 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 16·7, against a corresponding rate of 15·7 per 1000 in the large English towns. The death-rate during the week ranged from 6·2 in Ayr, 6·9 in Clydebank, and 12·0 in Hamilton, to 24·7 in Paisley, 25·2 in Kilmarnock, and 30·9 in Greenock.

The 890 deaths from all causes were 13 fewer than the number in the previous week, and included 95 which were referred to the principal epidemic diseases, against 89 and 82 in the two preceding weeks. Of these 96 deaths, 52 resulted from measles, 18 from infantile diarrhœal diseases, 8 each from diphtheria and whooping-cough, 7 from scarlet fever, and 3 from enteric fever, but not one from small-pox. The death-rate from these diseases was equal to 2·1, against 1·3 per 1000 in the large English towns. The deaths attributed to measles, which had increased from 23 to 43 in the four preceding weeks, further rose to 52, and comprised 30 in Glasgow, 6 in Kilmarnock, 4 each in Paisley and Coatbridge, 3 each in Edinburgh and Dundee, and 2 in Greenock. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 8, 11, and 12 in the three preceding weeks, further rose to 18, and included 7 in Glasgow, 3 in Dundee, and 2 each in Paisley and Greenock. The fatal cases of diphtheria, which had been 7, 16, and 15 in the three preceding weeks, fell to 8, and included 2 each in Glasgow and Aberdeen. The 8 deaths from whooping-cough were 4 in excess of the average in the earlier weeks of the quarter, and comprised 3 in Glasgow, 2 each in Aberdeen and Paisley, and 1 in Kirkcaldy. The deaths referred to scarlet fever, which had been 6, 12, and 8 in the three preceding weeks, numbered 7, and included 2 each in Glasgow and Greenock. Of the 3 fatal cases of enteric fever, 2 were registered in Glasgow and 1 in Greenock.

The deaths referred to diseases of the respiratory system, which had steadily increased from 88 to 212 in the six preceding weeks, fell to 189 in the week under notice, but were 37 above the number registered in the corresponding week of last year. The deaths from violence numbered 24, against 26 and 29 in the two preceding weeks.

## HEALTH OF IRISH TOWNS.

In the 19 town districts of Ireland with populations exceeding 10,000 persons at the last Census, 688 births and 572 deaths were registered during the week ended Saturday,

April 1st. The annual rate of mortality in these towns, which had been 24·5, 21·3, and 24·3 per 1000 in the three preceding weeks, rose in the week under notice to 26·0 per 1000 of their aggregate population, estimated at 1,148,468 persons at the middle of last year. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 20·6, against corresponding rates of 15·7 and 16·7 per 1000 in the English and Scotch towns respectively. During the week the death-rate was equal to 26·9 in Dublin (against 16·9 in London and 20·7 in Glasgow), 23·0 in Belfast, 33·3 in Cork, 20·2 in Londonderry, 32·5 in Limerick, and 20·9 in Waterford, while in the 13 smaller towns the mean rate was 28·4 per 1000.

The 572 deaths from all causes were 37 in excess of the number in the previous week, and included 47 which were referred to the principal epidemic diseases, against 38 and 45 in the two preceding weeks. Of these 47 deaths, 18 resulted from measles, 13 from whooping-cough, 8 from infantile diarrhœal diseases, 5 from diphtheria, 2 from scarlet fever, and 1 from enteric fever, but not one from small-pox. The death-rate from these diseases was equal to 2·1, against corresponding rates of 1·3 and 2·1 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had been 18, 16, and 18 in the three preceding weeks, were again 18 in the week under notice, and comprised 13 in Belfast, 4 in Dublin, and 1 in Londonderry. The deaths referred to whooping-cough, which had been 10, 8, and 15 in the three preceding weeks, fell to 13, of which 5 occurred in Dublin and 4 in Belfast. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 13, 10, and 5 in the three preceding weeks, rose to 8, and comprised 5 in Dublin, 2 in Belfast, and 1 in Clonmel. The 5 deaths attributed to diphtheria, of which 3 were registered in Belfast, were 2 in excess of the average in the earlier weeks of the quarter. The deaths from scarlet fever were recorded in Belfast and Cork, and that from enteric fever in Dublin.

The deaths referred to diseases of the respiratory system, which had been 124, 117, and 134 in the three preceding weeks, rose to 142 in the week under notice, and were 23 above the number registered in the corresponding week of last year. Of the 572 deaths from all causes, 171, or 30 per cent., occurred in public institutions, and 12 resulted from violence. The causes of 23, or 4·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest, and included 7 in Limerick and 5 each in Dublin and Galway; in the large English towns the proportion of uncertified causes did not exceed 1·0 per cent.

In the 19 town districts of Ireland with populations exceeding 10,000 persons at the last Census, 515 births and 474 deaths were registered during the week ended Saturday, April 8th. The annual rate of mortality in these towns, which had been 21·3, 24·3, and 26·0 per 1000 in the three preceding weeks, declined to 21·5 per 1000 in the week under notice. The death-rate was equal to 22·6 in Dublin (against 17·9 in London and 21·7 in Glasgow), 19·1 in Belfast, 20·4 in Cork, 22·8 in Londonderry, 31·1 in Limerick, and 32·3 in Waterford, while in the 13 smaller towns the mean rate was 20·8 per 1000.

The 474 deaths from all causes were 98 fewer than in the previous week, and included 41 which were referred to the principal epidemic diseases, against 45 and 47 in the two preceding weeks. Of these 41 deaths, 16 resulted from whooping-cough, 13 from measles, 8 from infantile diarrhœal diseases, 2 from scarlet fever, and 1 each from enteric fever and diphtheria, but not one from small-pox. The death-rate from these diseases was equal to 1·9, against 1·1 per 1000 in the large English towns. The deaths attributed to whooping cough, which had been 8, 15, and 13 in the three preceding weeks, rose to 16, and included 7 in Belfast, 3 in Limerick, and 2 each in Dublin and Cork. The deaths referred to measles, which had been 16, 18, and 18 in the three preceding weeks, fell to 13, and comprised 8 in Belfast, 4 in Dublin, and 1 in Newry. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 10, 5, and 8 in the three preceding weeks, were again 8 in the week under notice, and comprised 5 in Dublin, 2 in Belfast, and 1 in Londonderry. The deaths from scarlet fever were registered in Belfast and Cork, and that from enteric fever in Belfast, and the fatal case of diphtheria in Dublin.

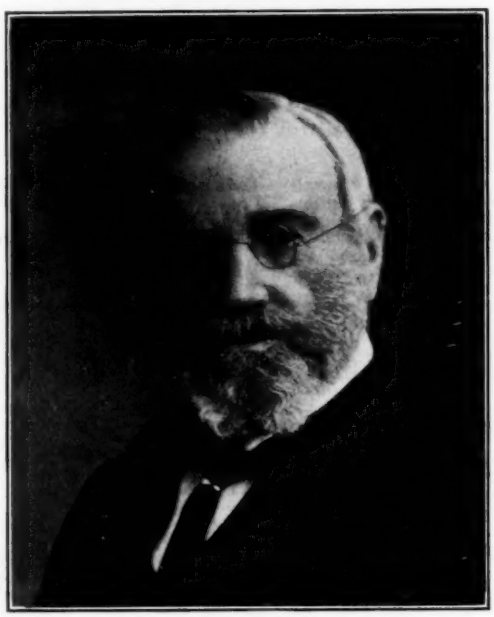
The deaths referred to diseases of the respiratory system, which had been 117, 134, and 142 in the three preceding weeks, fell to 120 in the week under notice, and were 35 below the number registered in the corresponding week of last year. Of the 474 deaths from all causes, 155, or 33 per cent., occurred in public institutions, and 12 resulted from violence. The causes of 13, or 2·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest, and included 5 in Dublin and 3 in Belfast, and 2 in Sligo; in the large English towns the proportion of uncertified causes did not exceed 1·0 per cent.

# Obituary.

## SIR THOMAS BOOR CROSBY, M.D. ST. AND., F.R.C.S. ENG., J.P., LL.D. ST. AND. & DUB.,

LATE LORD MAYOR OF LONDON.

WE regret to announce the death of Sir Thomas Boor Crosby, which took place on April 7th, after a brief illness, in his eighty-sixth year. Born at Gosperton, near Spalding, Lincolnshire, in 1830, the son of a farmer, he was educated in London, at University College School, and University College, and subsequently became a medical student at St. Thomas's Hospital. After obtaining the Licentiateship of the Society of Apothecaries of London and the Membership of the Royal College of Surgeons of England in 1852, having been demonstrator of anatomy in his medical school, he started in practice by joining an old-established firm of practitioners in Fenchurch-street. At that time the City of London was more of a residential quarter than it is to-day, and the firm to which he belonged had a busy practice among many leading City families. At a later period Dr. Crosby took up his residence in Finsbury, a recognised medical district less than 50 years ago. There he enjoyed a large practice, and there quite recently he described himself



SIR THOMAS BOOR CROSBY.

as being "still in harness." In 1860 he took the Fellowship of his College by examination, and in 1862 he graduated as Doctor of Medicine at the University of St. Andrews.

His connexion with municipal affairs dates back to 1877, in which year he was elected a Common Councillor of the City of London. He became Alderman for the Langbourne Ward, and 30 years later he served as Sheriff. During his year of office as Sheriff he paid, with other representatives of the Corporation, a visit to Berlin as the guest of the Berlin municipality, and in the same year he was knighted. In 1911, being the senior alderman below the chair, he was elected Lord Mayor of the City of London. He was then 82 years of age, and the choice of the City gave him the double distinction of being the first medical man to occupy the civic chair in the metropolis, and of being the oldest citizen who had ever undertaken the responsibilities of the Lord Mayor of London. In carrying out the duties of his office Sir Thomas Crosby was most conscientious and untiring, being ably assisted by his daughter as Lady Mayoress. During his mayoralty two events of outstanding importance occurred—namely, the appalling disaster to the *Titanic* and a coal strike which threatened to assume the dimensions of a national disaster. For the sufferers by the

foundering of the great White Star liner Sir Thomas Crosby raised £450,000 by a Mansion House Fund. When the coal strike was at a critical stage he convened a meeting of Lord Mayors, Mayors, and Provosts from all over the country at a few hours' notice, and the resulting intention on the part of the municipalities to take concerted action against impending danger did much to relieve the stress of a dangerous social situation. On retiring from the position of Lord Mayor the vote of thanks accorded to him in Common Hall was especially cordial, as it was recognised that he had used his civic position with great promptitude in the public cause.

In private life Sir Thomas Crosby was a shrewd, witty, kind, homely man, and his success was the outcome of persistent habits of hard work and self-restraint. He had no great learning, but he was an admirable magistrate, whose decisions were informed throughout with that real knowledge of the life of the people which the successful and industrious general practitioner cannot fail to possess. The distinctions bestowed upon him were many. He was an Officer of the Legion of Honour and possessed the Orders of the Crown (Germany), St. Olaf (Norway), Dannebrog (Denmark), and the Rising Sun (Japan). He was also LL.D. of Dublin and St. Andrews, a J.P. for the City of London as well as for the County of London, and a member of the Senate of London University.

### TOM BATES, L.R.C.P. & S. EDIN., M.R.C.S. ENG.,

CONSULTING SURGEON TO THE WORCESTER GENERAL INFIRMARY.

Mr. Tom Bates, the well-known Worcester surgeon, died at his residence, Foregate-street, Worcester, after a brief illness on April 3rd, having just completed 50 years of medical practice.

Mr. Bates was a native of March, Cambridgeshire, and after studying medicine at Edinburgh, Glasgow, and Paris, took the Edinburgh double qualification in 1866, becoming a Member of the Royal College of Surgeons of England two years later. At the Glasgow Royal Infirmary he had the advantage of being a dresser to Lord Lister at a time when that distinguished surgeon was introducing the antiseptic methods of surgery a—fact which Mr. Bates recalled a few weeks ago in our columns, when he sent us for publication a letter which Lister had written to him in 1893 in reference to a ca-e of tuberculous elbow. After acting as house surgeon at the Royal Infirmary, Glasgow, and holding other appointments at the Glasgow Lying-in Hospital and the Glasgow Lock Hospital, Bates went to Worcester, where he soon acquired a wide reputation as a surgeon and obtained a large practice in the neighbourhood. In 1879 he was appointed honorary surgeon to the Worcester General Infirmary, and worked assiduously for 30 years in the interests of that institution. Elected honorary consulting surgeon in 1909, he continued to work ungrudgingly for the infirmary, and two years ago, at the age of 70, and when he was on the eve of retiring into private life, he volunteered to act as resident house surgeon, the circumstances of the war having made it difficult to obtain house officers. His confrères in Worcester would not allow him to make the sacrifice, and the responsibility was shared among them. He was also keenly interested in the work of the Worcester Ophthalmic Hospital, to which hospital he was honorary surgeon for nearly 40 years. When the continuance of the war made the shortage of medical men severely felt, he again offered his services as resident in the infirmary, although he had by this time definitely retired from practice. Later he resumed active work when first one and then the other of the two sons who had taken his place in the practice accepted commissions in the Royal Army Medical Corps. He died, therefore, in the discharge of the duties that he loved and understood so well. In addition to the two sons, he leaves a widow and two daughters to mourn their loss.

He was buried at Astwood on April 7th, the coffin-plate being the name-plate from his house door bearing the simple words, "Mr. Bates, Surgeon."

### THE LATE MARY CHARLOTTE MURDOCH.

WITH reference to the obituary of Miss M. C. Murdoch, which was published in THE LANCET of April 1st, a correspondent writes as follows:—"To those of us who knew Dr. Mary Murdoch intimately, to those who knew her as a great physician, or as a fearless reformer, a good public speaker and leader, or as a generous-hearted friend, it was not surprising that her passing was the occasion of a wonderful public tribute to her life and work. Thousands of the inhabitants of the city of Hull followed her to her last resting-place; friends and colleagues from many parts of England, representatives from many societies and associations and philanthropic institutions, as well as her townspeople, high and low, flocked to do her honour. Her life and work in the practice of her profession has for many years past been an inspiration to many. She had that extraordinary love of little children which one often finds in very strong characters. It was an education in itself to do the hospital 'round' with her and see the real delight of the little patients and the greeting they gave her when she came into the ward, the sound clinical work, the instruction to her house surgeons, and the amount of original work done; for she did some valuable scientific research, more especially in the field of pericarditis, and the vaccine treatment of many diseases. She was essentially a clinician of the first water, a good diagnostician, with a remarkable power of pulling her patient round again. Her life was a life of devotion and utter self-sacrifice. As a doctor she knew no rest. Nothing was a trouble to her where her patient was concerned, and she had a wonderful way of cheering and bestowing comfort and bringing gladness wherever she went. Her loyalty towards her colleagues, her generous help to those in trouble or want, her radiant personality, her spirit of adventure, and her championship of all righteous causes will make her live in the memory of many as a great physician who will be greatly missed."

## Correspondence.

"Audi alteram partem."

### THE PREVENTION OF BILHARZIA INFECTION.

*To the Editor of* THE LANCET.

SIR,—There are several means of preventing the spread of bilharziosis amongst civilians, and more especially amongst troops now on active service. Up till recently, South African practitioners advised persons to avoid swimming in those rivers and pools which were known to be associated with the disease. The filtering of the town supply of fresh water has been attended with a marked diminution of the number of cases of bilharziosis in some towns; but the removal of the intermediary hosts from places where they are exposed to infection or are likely to cause infection has not received the attention it deserves. There is a significant distribution of one form of fresh-water snail in Natal. This snail could well be removed from certain parts of the country where bathing is indulged in. So far we have no reason to suppose that these snails are a danger to the community until they have come into contact with urine passed by a person suffering from bilharziosis. There is reason to suppose that infected persons such as coolies and others may infect a river at its source, that these snails which abound on the rushes lower down stream become a source of danger to the water-supply within a month or six weeks, and that healthy persons who make use of this river water for drinking or bathing purposes during the next day or two are liable to contract the disease.

Certain snails have been proved to act as intermediary hosts for Asiatic schistosomiasis in China and Japan. The Bilharzia Mission to Egypt in 1914 demonstrated that several varieties of fresh-water snails could act as intermediary hosts for the Egyptian form of the disease. I have found a dark sinistral snail, Physopsis africana, abounding in several of the bathing-places in Natal which are known to be associated with bilharzia infection. These snails were particularly abundant in three places where the infection is believed to be particularly severe. This common fresh-water snail has been found to harbour two different species of cercariæ presenting forked tails here in Natal. From this I infer that this species of snail may act as an intermediary host for bilharziosis in South Africa.

I am, Sir, yours faithfully,

F. G. CAWSTON, M.B., B.C. Cantab.

Maritzburg, Natal, March 3rd, 1916.

## THE OPERATIVE TREATMENT OF OSTEO-ARTHRITIS.

*To the Editor of* THE LANCET.

SIR,—While fully appreciating the complimentary references to my operative work in connexion with cases of osteo-arthritis, my attention has been drawn to an injustice to Mr. Sampson Handley which your annotation in THE LANCET of April 1st inadvertently suggests. My case, to which you so kindly refer, was admittedly the first of the kind, but Mr. Handley, working independently, was the first to publish his results, and he also was responsible for the term "cheilotomy." Mr. Handley published his operative experiences on this subject in the *British Medical Journal* of May 3rd, 1913. My case, although operated upon three months before Mr. Handley's first case, was not published until a week later (May 10th) in the same journal.

I intend to send you a further communication with X ray photographs illustrating the operative procedures required in the treatment of osteo-arthritis, and will then be able, if you will kindly permit me, to fill in the gaps to which THE LANCET refers.—I am, Sir, yours faithfully,

Dublin, April 7th, 1916. W. I. DE C. WHEELER.

## ANÆSTHESIA FOR ENUCLEATION OF TONSILS.

*To the Editor of* THE LANCET.

SIR,—In THE LANCET of April 8th Dr. J. Blomfield advocates the use of ether for the above operation. No doubt in the hands of a general practitioner it is the safest anæsthetic, but the results, to my mind, are not to be compared with those obtained by the use of chloroform and oxygen. Addition of the latter lessens the risk, and I have used this combination in over 1000 cases successfully. All patients over the age of 16 have a preliminary hypodermic injection of morphine and atropine. Anæsthesia is induced very gradually with chloroform dropped on to a mask with one layer of flannel; as soon as the patient is just under, a mouth prop is fixed in position and warmed oxygen is passed through chloroform and thence to a pipe fixed to the mouth prop This usually suffices to keep the patient under with no faucial straining for half an hour or more, though occasionally it is necessary to use the mask for a few minutes after the removal of one tonsil. The advantages over ether are: no congestion, less tendency to vomiting, more agreeable odour, and the patient comes round rapidly. It is easy with practice to keep the patient in the ideal stage—that is, deep enough to avoid faucial straining and light enough to enable the cough reflex to be recovered in a few seconds.

I am, Sir, yours faithfully,

HUGH R. PHILLIPS, M.D. Edin.,
Senior Anæsthetist, Italian Hospital, &c.

Dawson-place, W., April 9th, 1916.

## THE DROITWICH BRINE BATHS.

*To the Editor of* THE LANCET.

SIR,—In consequence of the large number of soldier patients who are receiving free treatment at the brine baths at Droitwich an impression appears to be entertained by certain medical men that the baths have, for the time being, been given over entirely to military patients.

Such is not the case, and the arrangements for dealing with ordinary cases are in nowise affected.

I am, Sir, yours faithfully,

J. H. HOLLYER,
Droitwich, April 7th, 1916. Director of the Brine Baths.

## ENTERIC AND TYPHOID: A POINT IN NOMENCLATURE.

*To the Editor of* THE LANCET.

SIR,—Since the differentiation of the typhoid group of disease into the three varieties caused by the Eberth-Gaffky bacillus, the B. paratyphosus A, and the B. paratyphosus B respectively, a need has arisen for one word which can be used for the whole group in common. In the large majority of cases it is quite impossible to diagnose clinically the three infections one from the other; and it is not always possible to obtain readily bacteriological aid.

There is no necessity, however, to coin another word, as we possess two already which are used interchangeably—"typhoid" and "enteric." I suggest that the word "enteric" be used to denote all or any of the three infections above mentioned, and any similar that may hereafter be differentiated; and that the word "typhoid" be restricted to cases of infection by the Eberth-Gaffky bacillus.

I am, Sir, yours faithfully,

E. W. GOODALL.

Eastern Hospital, Homerton, N.E., April 10th, 1916.

## STEEL HELMETS FOR THE ARMY.

*To the Editor of* THE LANCET.

SIR,—Although no one can approve of the manner in which an officer of the Royal Army Medical Corps drew attention recently in the House of Commons to the need for the issue of steel helmets to the army, yet every surgeon who has seen much of the wounds received by our soldiers in the present war will agree that there is a most pressing need for the supply of steel helmets to the soldiers. No small proportion of the wounds received involve the head, and the use of a steel helmet would have prevented very many of these. Even when the bullet or shell fragment has done no more than groove the scalp, a convalescence of several weeks is required before the soldier can return to the firing line, and if we put the matter on the low level of expense, it is clear that much money is unnecessarily used in the carrying of these soldiers to and fro. The skull itself is, however, in many cases grooved, and in these cases the throwing off of the necrosed portion of bone will take many weeks. In other cases still the brain has been injured, and in a large proportion of these a fatal result has followed. It is often said that a steel helmet cannot be devised which is capable of preventing all bullet wounds of the cranium. This is no doubt true, but it is equally true that a very large proportion of the projectiles would be arrested. The Government has already issued a few hundred thousand steel helmets, but the delay in issuing the remainder is entirely unnecessary, and I cannot doubt that if the authorities appreciated the value of the steel helmet very little time would elapse before all our troops serving at the front would be provided with it.

I am, Sir, yours faithfully,

April 8th, 1916. F.R.C.S.

## DIFFERENT NAMES FOR IDENTICAL SUBSTANCES.

*To the Editor of* THE LANCET.

SIR,—With regard to the annotation in your issue of April 8th relative to the use of the word "Tolamine" as a short title for para-toluene-sodium-sulphochloramide, we suggested the use of this word to the authors of the research in place of chloramine or chloramine-T, the names they gave to the substance, because the word chloramine has been used by John Wyeth and Brother, Philadelphia, for at least 25 years to denote a compound chloride of ammonium pastille manufactured by them.

We were desirous of respecting the wishes of the investigators by adopting the title they suggested, but felt bound to regard the vested interests of the manufacturers who had used the word chloramine for at least a quarter of a century to describe a particular preparation of their manufacture. We made our position in the matter perfectly clear to the investigators and gave them the option of adopting "Tolamine" as a common word for the substance, but as they did not agree to this suggestion we then explained that it was impracticable for us, in the circumstances we had mentioned, to use the word chloramine or chloramine-T (the latter title still containing the word chloramine), and we should therefore issue the preparation under the word "Tolamine" and register it as our trade mark.

In our opinion the use of the word chloramine involves the danger of using one name for many substances, as, quite apart from the confusion which will arise with the existing proprietary preparation, chloramin and chloroamine are applied to the simple compound $NH_2Cl$, and further there is additional risk of confusion with the Codex preparation chloramide. From the trade point of view the *Chemist and Druggist* has also pointed out that there is likely to be a good deal of confusion in the use of the word chloramine proposed for para-toluene-sodium-sulpho-chloramide.

We are, Sir, yours faithfully,

BURROUGHS WELLCOME AND CO.

Snow Hill Buildings, E.C., April 10th, 1916.

# The War.

## THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

*Killed in Action.*

Major W. L. Hawksley, R.A.M.C. (T.F.), qualified in 1904, and held a public health appointment at Liverpool prior to the war.

*Died.*

Captain F. F. German, R.A.M.C., qualified in 1881, was in charge of the Military Hospital at Seaforth Barracks, and was medical officer of health for Waterloo with Seaforth, Liverpool.

Colonel A. E. J. Barker, A.M.S. (Major 3rd London General Hospital, R.A.M.C.) was educated at Dublin and at Bonn University, and was Professor of Surgery at University College, London.

Major R. S. Smyth, R.A.M.C., received his medical education at Dublin, qualifying in 1904, and joined the R.A.M.C. in 1905. He was mentioned in despatches by Viscount French, and was a well-known football player in Ireland.

Captain G. F. Barr, R.A.M.C., qualified in 1914 at Glasgow, and joined the R.A.M.C. in January, 1915.

*Wounded.*

Captain C. R. Woodruff, R.A.M.C.

Lieutenant N. McCall-Smith, R.A.M.C.

## DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Colonel A. E. J. Barker, A.M.S., son of the late Dr. W. Barker, of Dublin.

Major W. L. Hawksley, R.A.M.C., son of the late Dr. H. L. Hawksley, of Southport.

Lieutenant J. Nichol, Royal Scots Fusiliers, and Flying Officer, Royal Flying Corps, second son of Dr. F. E. Nichol, of Margate.

Second Lieutenant C. B. Underhill, West Yorkshire Regiment, fourth son of Dr. F. T. Underhill, formerly of Tipton, Staffs., and now medical officer of health of Vancouver City, British Columbia.

## MENTIONED IN DESPATCHES.

In a despatch to the Chief of the General Staff, Army Headquarters, India, dated Jan. 1st, 1916, dealing with the operations in Mesopotamia, General Sir John Nixon, K.C.B., mentions the following medical officers for distinguished service :—

| | |
|---|---|
| Surg.-Gen. H. G. Hathaway, C.B. | Capt. G. Wilson, R.A.M.C. |
| Col J. F. Donegan, R.A.M.C. | Capt. P. B Bharucha, I.M.S. |
| Col. P. Hehir, I.M.S. | Capt. R. C. Clifford, I.M.S. |
| Col. H M. Adamson, R.A.M.C. | Capt. R. E. Flowerdew, I.M.S. |
| Lt.-Col. E. Jennings, I.M.S. | Capt. F. A. Robinson, R.A.M.C. |
| Lt.-Col. H. O. B. Brown-Mason, R.A.M.C. | Capt K K. Mukerji, I.M.S. |
| Maj H R. Brown, I.M.S. | Capt. J Martin, R.A.M.C. |
| Maj. A. Spitteler. I.M.S. | Lt. R. V. Martin, I M.S. |
| Maj. S. Anderson. I.M.S. | Lt F. T. Simpson, R.A.M.C. |
| Maj. F. C. Lambert, R.A.M.C. | 2nd Class Asst.-Surg. E. S. Shede |
| | 3rd Class Asst.-Surg. E. A. Cotton |

## MILITARY ORTHOPÆDICS.

Lieutenant-Colonel Robert Jones, R.A.M.C. (T.), has been appointed by the War Office Inspector of Military Orthopædics, and military hospitals will be organised and conducted under his supervision specially to deal with the injuries to limbs and joints of men wounded in the war, with the object of fitting them for civilian employment. The support and practical assistance of the British Red Cross have been secured for a scheme which those who have witnessed at the Roehampton Hospital what can be done in these directions know will have a valuable outcome.

## MEDICAL NOTES FROM THE SALONICA FORCE.

A Field Ambulance Officer with the Salonica Force writes as follows:—Everyone is aware of the somewhat unique position of the Allies' army around Salonica. The medical arrangements of the Salonica Force, after the retreat, have been carried out under conditions somewhat easier than those in a country where it has been necessary to plan and erect hospitals at the time when heavy fighting has already commenced. The outstanding feature of medical interest while British troops were in the Lake Doiran district was the amount of frost-bite—true frost-bite—not the "frozen feet" of France in the winter of 1914–15. At the present time the lines of communication are not long, but the similar medical units exist as in France—field ambulances, casualty clearing stations, stationary and general hospitals. The railroads and roads are few, and so transport of sick and wounded forms one of the difficulties of the medical service. The methods adopted to overcome these difficulties and the sanitation of the camps are the interesting topics to the medical man.

The present tactics have made it possible to have all the hospitals and casualty clearing stations on good roads, and motor transport is available between these and the quay. In France motor ambulances were able to work with the field ambulances; in Greece that is not at present possible owing to the few roads in existence. The method of transport available will be mentioned later. The general hospitals are under canvas and have been able to find good sites owing to the extent of open plain which exists on two sides of the town for some distance.

The hospitals are occupied with treating the average influx of sick from the army. There is no outstanding disease, although a type of fever not simulating any text-book fever has been prevalent. It is of a relapsing type—hence comparable to "trench fever." It occurs in men of every age and commences suddenly with pyrexia of about 100° F., the pulse-rate rising correspondingly. The pyrexia lasts 48 hours as a rule, and then an apyrexia period follows, lasting three, four, or five days; some observers state as long as seven days. Then a pyrexial period recurs lasting 48 hours. Cases are established with three and four relapses. Symptoms are not plentiful and often limited to back pains and pains in the legs, particularly down the shins. No physical signs of anything abnormal in the circulatory, respiratory, and alimentary systems exist; a few observers record some cases with diarrhœa, but this is the exception. The noticeable feature is the persistence of pains during the apyrexial period. There are no cases recorded of important complications, but patients require a considerable time to convalesce after several relapses of fever. Pathologists have shed no light on the origin of the disease at present. The population of the town suffer from malaria, and this occurs in all the villages of the district. It appears that the worst months are August and September. Cholera occurs in epidemics, the last two being in 1911 and 1913. All the medical officers are able to acquaint themselves with a knowledge of local diseases and conditions, owing to the early formation of the Salonica Medical Society, of which Surgeon-General W. G. Macpherson, C.B., is the president. This society meets weekly at each hospital in turn, and discussions and demonstrations lasting about two hours are eagerly attended. The proceedings will be published from time to time in the *Journal of the Royal Army Medical Corps*.

The success of the sanitary arrangements will be tested when hotter weather commences and flies begin to breed, but the details of these as carried out by the Salonica force are of interest, as are also the means of transport from the regiments and ambulances to the clearing stations, and with the aid of the few sketches here reproduced these will be described.

*Sanitation.*

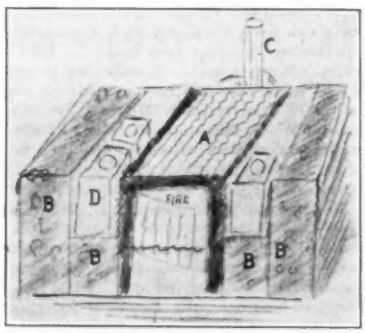
The country around Salonica occupied by the army consists of a range of hills, in most places about 1000 feet above sea-level, with plain on each side of the range. These hills are broken up by many gorges, in each of which runs a stream after any fall of rain, and in the larger valleys always one finds a stream rushing down. The larger streams at this time of year increase to double their size after 12 hours of steady rain. The country therefore possesses one outstanding advantage for camping sites—plenty of streams, and hence

a persistent water-supply at this time of year. On the other hand, the tendency for the water to stand on much of the level ground makes every camp wet unless properly drained.

It has been somewhat easier to carry out sanitary arrangements in the Salonica army than in some fighting zones, for there has been no fighting in the present position. Regimental sanitation has not been difficult, for in most cases the regiments have been divided up, and a camp of under 500 men with few horses and mules is not difficult to keep clean. In regard to the water, this is brought from the stream on mules, each mule carrying a metal urn covered with cloth on each side of the pack saddle, or a "pakkal," which consists of a rubber bag inside a canvas valise. From these the water is poured into zinc tubs, each provided with a lid. In these tubs is placed chloride of lime to purify the water. The water, however, is extraordinarily pure. Most of the streams that have been tested have proved to be of excellent water. In fact, one gathers that the only water-supply that has been polluted at any time was one near the base; in this case a pipe came from the stream to large storage tanks near a road, and from the tanks the water was drawn for surrounding units. The water is clear, and so clarification is not required except after a heavy storm, such as causes the streams to bring down mud with the water. In some places the purification of the water does not rest with the unit, as is usually the custom, but the divisional sanitary officer employs some of his orderlies to carry out the necessary purification of the water at the edge of the stream or beside the spring from which the water is drawn. This system has obvious advantages, and is carried out by having a series of zinc tubs beside the supply. These are kept full and the requisite quantity of chloride of lime added from time to time. By this method disease due to water contamination is unlikely to occur, but of course would affect a large number of men. A source of water which has not been mentioned is the ancient aqueduct. This sounds perhaps fabulous, yet several fine aqueducts still exist and show signs of modern workmanship. Each has a cross-section of about one square foot and is walled and roofed by good cement. The water is excellent, both clear and free from all salts and organisms. It flows uphill in places and forms part of the water-supply to the town. There is no chance of pollution of these aqueducts except at the small openings from which water is drawn. What quantity of water will be available from these natural sources in the hotter weather cannot be foretold.

The disposal of all forms of refuse and excreta is a subject on which much has been written, and so many methods are adopted, each of which fulfils the same purpose. From experience in France most units adopt the method of burning

FIG. 1.

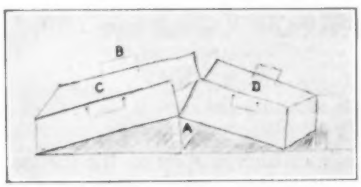



Incinerator showing method of heating water. A, Roof; B, mud walls C, chimney; D, biscuit-tin containing water. Size, 6 ft. square; incinerator, 6 ft. by 3 ft. by 2 ft.

all solid refuse, and treating all liquids so that they will be absorbed by the earth from pits. Dealing first with solids, one finds that horse and mule dung predominates over all other refuse in the majority of units, as it is necessary to have mules for transport. This is dealt with by incineration, thus preventing any accumulation of manure. The incinerator used in most units is about 4 feet square and 4 feet high, and if one is insufficient several are built out of mud and stones. A new type is in use in some places consisting of a central support such as a biscuit tin and radiating iron strips fixed on pieces of wood protruding 18 inches from the ground. The iron strips are the bands fixing the fodder together, and about a dozen are required for the incinerator. The manure is thrown on to this and burns well, as it is raised off the ground and has a free draught from below. An ingenious incinerator has been devised, which serves a double purpose, the second one being to heat water for washing purposes. This is done by building with mud and stones round the incinerator an additional wall. It is only possible in a square or rectangular incinerator. Between the two walls the floor is raised with more mud, and on this are placed biscuit tins with water in them. It is found that when an incinerator is burning well the water is quickly heated, and six or eight tins of two gallons' capacity can be heated at the same time. (Fig. 1.)

Human excreta are dealt with in a similar manner to manure—i.e., incineration. Surgeon-General Macpherson takes a great interest in latrine systems, and while Director of Medical Services to the First Army in France he introduced a system of latrine, which became popular where it was in use. This type of latrine has become much more general in the units of the Salonica army, and is seen at its best at the New Zealand Stationary Hospital. Full details of the latrine were published last January in the *Journal of the Royal Army Medical Corps*. There are two tins (see Fig. 2), each consisting of half of a Pratt's petrol tin. Each

FIG. 2.




Macpherson latrine system. Two half-tins in position. A, End of tin (everted to raise end); B, handle of wire; C, for urine; D, for fæces.

tin is placed on the ground with one end raised 4 inches, the two raised portions being together. A man squatting over these tins defæcates into one and urinates into the other. That is not all. A piece of newspaper, about 12 inches by 18 inches, is placed in the hindmost tin, and the stool is passed on to this; when the man has completed his defæcation it is then his duty to remove his own excreta from these tins. The front tin is emptied into a drain leading into a pit, so that the urine is absorbed by the earth. The newspaper is taken with the stool inside it and placed on a special incinerator. The tins are replaced in position, and a piece of paper laid on to the hindmost tin so as to be ready for the next man. The incinerator is kept in most hospitals for dealing with fæces alone. It is found that fæces burn well with an odour to which all grow accustomed, and it has been likened to that of a bad Turkish cigarette. Some prefer to dry the fæces at the side of the tin in which they are burning. Any quantity can be dealt with by this method. The advantage of burning fæces is obvious, and the simple method of separating fæces and urine facilitates their destruction by burning. Strict discipline is necessary for this latrine system to be worked, so that tins are never soiled. After a lecture and posting of rules how to use these latrines it has been found that they work excellently, especially if an orderly or convalescent patient is employed at the latrine to supervise the adherence to the rules. The advantages of the system are manifest when one realises that flies have no place to lay eggs in any fæcal matter, for only a minute elapses between the passing of the stool and its disposal in the incinerator. Some units separate fæces and urine by two tins under a seat, as a rule consisting of a V-shaped piece of wood placed on three uprights, the point of the V being in front. Prevention of breeding of flies is the object of all, and the chief point aimed at is the incineration of all solid matter.

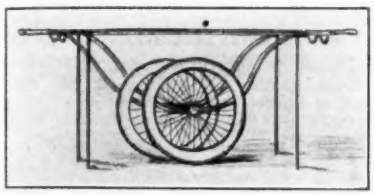
A matter of sanitary interest in this area is that during December and January whenever a unit went to a new camp site it was almost invariably necessary for them to remove carcasses from the ground. The Greek has a habit of driving a bullock, mule, pony, or donkey until the beast actually falls down dead. He then leaves the beast beside the road. Later he appears and removes the hide, leaving the carcass

on the spot. From the number of these carcasses one would imagine the mortality of the beasts of burden is high. The vultures attack the carcasses, and a most insanitary state of affairs exists until dealt with by our sanitary officers.

*Transport.*

As the tactics differ in trench warfare and fighting in mountainous country, so likewise the medical arrangements *in toto* suitable in France would be unsuitable for any army fighting around Salonica or in Bulgaria or in Serbia. Thus

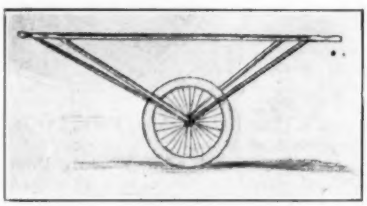
FIG. 3.



Miller-James collapsible stretcher carrier.

changes in the equipment and transport of field medical units of the Salonica force have been made to make units previously in the Dardanelles or France efficient to deal with sick and wounded in a country with geographical conditions differing from those which such units have formerly experienced. In France trench stretchers and motor ambulances were necessary accessories to the original equipment, but in the Near

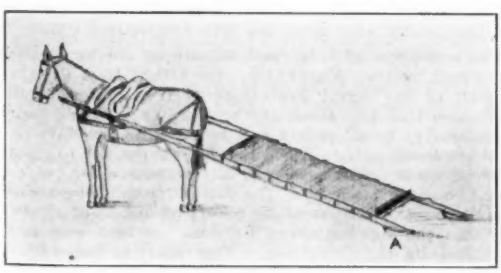
FIG. 4



Mono-wheel stretcher carrier.

East improvisation of stretchers and modes of transport are necessary, as roads are few and hill tracks are all that can be depended on as a route for casualties from field units. Hence one finds the motor ambulance confined to a small area close to the sea. Horse ambulances (Mark VI. and Mark I.) can go further; the former is heavy, weighing 1¼ tons, and in winter sinks deeply into the mud; the latter is light and well sprung, and weighs ¾ ton, and is suitable for good hill tracks.

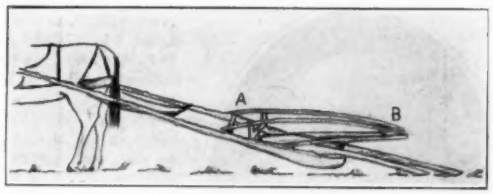
FIG. 5.




Simple travois (after Greenleaf). A, Shoe.

Wheel stretchers are being modified that mules can pull them up tracks. In some cases shafts are fixed to these, and in others the traces are fixed to swingle-trees attached to the carriage. Three forms of wheel stretcher exist—the army type, the carriage, ambulance-stretcher, Mark I., which has large wheels; the Miller-James folding carriage, consisting of two motor-bicycle wheels and metal framework (Fig. 3), and a mono-wheel introduced during the last year, which consists of one motor-bicycle wheel and light folding framework. (Fig. 4). Travois are being made by units, and many different kinds were displayed at an exhibition in January. Some were cumbersome and others would not stand the trial given to them over a piece of rough ground. The essential requirements are that a wounded man may be able to lie on a stretcher (or improvised substitute) and be pulled by a mule with as little shaking as possible, the whole vehicle being able to get over ditches and rough ground. To suit these conditions it is found that the travois made out of green wood takes the first place. The simple travois, after the style of Greenleaf's travois (Fig. 5), is not a great success, but the shock of going over rough ground is diminished 50 per cent. by making one leg of the travois 1 foot to 8 inches shorter than its fellow. Another method of obviating this difficulty is to have a third and larger leg in

FIG. 6.

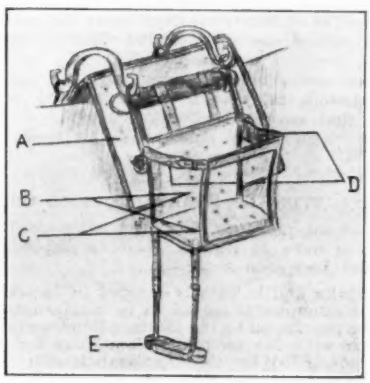



Harris travois. Patient lies between A and B on sack filled with leaves.

the centre, which only comes into use on uneven ground and diminishes the shaking of the patient greatly. (Fig. 6.) Manufacture of these conveyances is facilitated by the quantity of wood in many of the places which ambulances have chosen for their dressing stations.

Mule transport for patients is useful for such as need not travel lying down. A strong mule is required to carry two patients sitting in cacolets, one patient on each side of the pack-saddle. (Fig. 7.) This is not an uncomfortable chair,

FIG. 7.




A, Pack-saddle; B, leather cushion; C, collapsible iron frame D, strap; E, foot support.

and the stronger mules work readily if the weight is equally balanced. Litters have been made to fix to the pack-saddles, one litter each side of a mule or two between two mules. Stretchers are not adaptable for fixing on to mules for transport of lying-down cases. It is more than probable that the lying-down case will experience great hardship as he is evacuated.

To sum up the available transport:—I. In any locality: (1) hand-carriage—(*a*) on army stretcher (Mark II.), (*b*) on trench stretcher in which patient's back is supported against the back of the front bearer; (2) wheel-stretcher—(*a*) mono-wheel, (*b*) two-wheeled, either may be pulled by a mule; (3) travois; and (4) litters. II. Where tracks exist: Horse or mule ambulances—(*a*) heavy, and (*b*) light. III. Where roads exist: Motor ambulances.

## OBITUARY OF THE WAR.

### JOHN TEMPLE LEON, M.D., B.Sc. LOND., M.R.C.S., L.R.C.P. LOND., D.P.H. CAMB.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS (T.).

Captain John Temple Leon, who died at Southsea on March 30th from cerebro-spinal meningitis, contracted from a military patient under his care, was 50 years of age. He started with the intention of being a scientific chemist, and after leaving Clifton went to Germany. Subsequently he entered at University College, London, where he was Tufnell scholar in 1885. Two years later he graduated as B.Sc. Lond., and in 1890 was appointed assistant lecturer on physics and demonstrator of chemistry in St. Mary's Hospital Medical School. After holding those appointments for three years he commenced his medical studies at St. Mary's, where he had a successful career, graduating as M.B. Lond. in 1896 and D.P.H Camb. in the following year. After qualifying he was appointed on plague duty in India, where he did useful work in collaboration with Professor Haffkine. Subsequently he served throughout the South African War and was for the greater part of the time attached to No. 8 General Hospital at Bloemfontein. On his return from South Africa he was for a time assistant medical superintendent of Paddington Infirmary, after which he settled in practice at Southsea and was shortly afterwards appointed honorary assistant physician to the Royal Portsmouth and Gosport Hospital. On the outbreak of the present war he was mobilised as captain in the Royal Army Medical Corps (T.) and was appointed sanitary specialist officer for Portsmouth. His duties involved the inspection of the sanitation of the various camps in Hampshire, and the carrying out of the bacteriological work in connexion with the various epidemics that arose. He worked assiduously at these posts, and there is no doubt that his death was due to his unsparing devotion to duty. He had for several weeks been thoroughly overworked, and proved susceptible to infection from a severe case of cerebro-spinal meningitis. He first showed the symptoms of the disease on March 20th. It rapidly acquired a virulent form, and in spite of the devoted attention that he received from his colleagues, Lieutenant-Colonel C. F. Routh and Major C. A. S. Ridout, he died ten days later. He leaves behind him the record of a brave man who worked unsparingly for his country, whilst the medical profession in Hampshire is the poorer for an excellent physician and an able bacteriologist.

### RONALD WINGRAVE DUNCAN, L.R.C.P., L.R.C.S. EDIN., L.F.P.S. GLASG., L.D.S. R.C.S. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain Ronald Wingrave Duncan, who was killed in action in Mesopotamia, at the age of 33, received his medical and dental education in Edinburgh. After qualifying in 1906 he held appointments at the West Bromwich District Hospital; Salford Royal Hospital; Norfolk and Norwich Hospital; David Lewis Epileptic Colony, Alderley Edge; Monsall Fever Hospital, Manchester; and Ladywell Sanatorium, Salford. He left the last appointment in November, 1914, to take a commission in the Royal Army Medical Corps. He was attached to the 2nd Black Watch, Bareilly Brigade, Merut Division, Indian Expeditionary Force.

Dr. James Fletcher writes of him: "Mr. Duncan was a most pleasant and capable colleague to work with, and though naturally of a very retiring disposition he was a thorough sportsman, with a keen sense of humour, which found its full vent when in congenial company. His extremely kindly disposition and sympathy for others endeared him to his patients and the staff, and I shall always have the happiest recollections of my association with him."

### THE RECRUITING OF PHARMACEUTICAL CHEMISTS.

The following provision has been substituted for that previously in force as regards chemists dispensing under the National Insurance Acts:—

Men lawfully and habitually engaged in dispening medicines to be exempted if agreed to be indispensable for the needs of the population by the Military Representative, after consultation with the Insurance Committee for the area,* or if recommended by the National Health Insurance Commission and approved by the Army Council.

*The Insurance Committee shall consult the Pharmaceutical Committee before deciding which cases to recommend for exemption.

This provision places the Insurance Committee for the area in a position of responsibility as regards the dispensing service of the whole of the civil population, and not solely as regards the dispensing service of insured persons; but the National Health Insurance Commission points out that the proper consideration of the insured must necessarily involve attention to the needs of the civil population as a whole, since it is doubtful whether in any circumstances the requirements of insured persons could be adequately served unless the available chemists were in a position to cope simultaneously with the needs of the uninsured. The Insurance Committees are therefore enjoined to consult with the Pharmaceutical Committee as to the list of persons to be recommended to the Military Representative for exemption, and in the event of any disagreement between the Insurance Committee and the Military Representative as to the exemption of any of the persons whom the Committee, after consultation with the Pharmaceutical Committee, consider to be indispensable, the question can be referred to the Commissioners.

### SOLDIERS AND SAILORS DENTAL AID FUND.

The committee of this fund announces the termination of its work, as from March 11th. Sir Arthur May, Director-General of the Naval Medical Service, has informed the committee that the Admiralty will supply artificial teeth, if necessary, to all sailors and recruits for the navy and all the overseas men. The War Office has decided to supply artificial teeth, if necessary, to all overseas men, but not to the home-service army. The committee can congratulate itself upon the success of its efforts on behalf of the two services; the appreciation of its work has been constantly expressed by the authorities. The report of the work of the committee shows that since its inception the fund has dealt with over 11,000 fighting men, and this without paying salaries, rent, rates, or taxes. Owing to the patriotism of the press and the generosity of the supporters of the fund no expenses have been incurred in advertising. Since November, 1915, the committee has paid for all the artificial teeth of the home-service men.

AMONG the new justices of the peace for the County of London is Mr. Morgan I. Finucane, surgeon and barrister, of Ashley-place, S.W.

# Medical News.

UNIVERSITY OF OXFORD.—The following degree has been conferred:—

*Doctor of Medicine*—Alfred Leslie Pearce Gould, Chr. Church.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiolology held on March 30th and 31st, and April 3rd and 4th, 78 candidates presented themselves, of whom 56 were approved and 22 were rejected. The following are the names and medical schools of the successful candidates:—

Yenny Abdel-Messiah, King's College; Abraham Abelson and Norman Dyer Ball, University College; Margarita Bargood Barfield, London School of Medicine for Women; Jules Samuel Boruchowitz, Brussels University and University College; Jean Auguste Andre Boulc, Guy's Hospital; Osmond Hayman Brown, Charing Cross Hospital and King's College; Norman Carwardine Cooper, Bristol University; Andrew Norman Macdonald Davidson and Evan Sherrah Davies, King's College; Frank Swinburne Drewe, St. Thomas's Hospital; Abraham Eidinow, London Hospital; Frederick Knowles Escritt, Guy's Hospital; Frederick Augustus Evans, London Hospital; Paul Faraci, Beirut and King's College; John Eskdale Fishburn, Guy's Hospital; James O'Farrell Fletcher, St. Mary's Hospital; Richard Gainsborough, Oxford University; Edwin Stowell Gawne, Liverpool University; Nannie Gibson, London School of Medicine for Women; Chapple Gill-Carey, Guy's Hospital; Philip Eldon Gorst, Liverpool University; Lawrence Handy, St. Bartholomew's Hospital; Herbert William Hill and Tom Robert Ernest Hillier, Middlesex Hospital; Anthony Bancroft Isaacs, St. Thomas's Hospital; George Henry Johnson, Middlesex Hospital; Ernest Francis Kerby, Guy's Hospital; Haji Hyderali Khan, Bombay University and Guy's Hospital; Francis Wharton Lemarchand, St. Bartholomew's Hospital; Pierce Lloyd-Williams, Douglas McClean, and John Joseph Myles MacDonnell, St. Thomas's Hospital; Charles Moffatt, Guy's Hospital; John Stephen Moore, St. Thomas's Hospital; Arthur Richard Neckles, Guy's Hospital; Clement Nicory, St. Thomas's Hospital; Arthur Gordon Ord, Guy's Hospital; Leonard Duncan Porteous, St. Bartholomew's Hospital; Percival George Quinton and Walter Ernest Quitman, University College; David Hesketh Richards and Enoch Sanders, Liverpool University; Malcolm Catchick Sarkies, Henry Mearns Savery and Walter Manley Savery, Middlesex Hospital; Ernest Algernon Sparks, St. Thomas's Hospital; Victor Alexander Trevor Spong, St. Bartholomew's Hospital; Graham McKim Thomas, Guy's Hospital; John Henry Tighe, Birmingham University; Bertie Moorwood Tonkin, Guy's Hospital; William Stephen Tunbridge, Oxford University and St. Bartholomew's Hospital; Jacob Eliza de Villiers Van der Merwe, Guy's Hospital; Frederic Francis Wheeler, St. Mary's Hospital; Herbert Edward Williams, London Hospital; and Robert Wolff, Middlesex Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Preliminary Science Examination for the Licence in Dental Surgery, held on March 28th, 29th, 30th, and 31st, the following candidates were successful:—

*Chemistry and Physics.*—Alfred Meredyth Bennett, Westminster School; John Heath Broadhead, Technical College, Darlington, and Bootham School, York; Christopher Egbert George Busbridge, Plymouth Technical School; Harold Edward Fussell, County School, Wrexham; Graham Murray-Shirreff, Bristol University; Harry Sydney Kemp Seal, University College; Victor Leslie Simpson, Polytechnic Institute; William Sandford Waid, Eastern District Secondary School, Douglas; John William Ernest Warren, Birkbeck College; James Andrew Whittle, Royal Dental Hospital; Norman Buist Wells, Municipal College, Bournemouth; and Frank Woodford, Guy's Hospital.

*Chemistry.*—John William Kewley Cain, Eastern District Secondary School, Douglas; and Allistair Hyland Grieve, Birkbeck College.

*Physics.*—William Thomas Lloyd Douglas, London Hospital; and Thomas Edward Hoggins, Birmingham University.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful:—

PRIMARY EXAMINATION, PART II.

*Anatomy.*—W. M. Anthony, St. Thomas's Hospital; G. R. Aspinwall, Cambridge and Guy's Hospital; W. A. Bibby, Manchester; T. L. Bonar, Cambridge and Middlesex Hospital; J. Brodetsky, London Hospital; K. R. Chapple, St. Bartholomew's Hospital; E. S. Davies and D. A. Dyer, King's College; J. Gordon, Leeds; J. Gorsky, King's College; W. R. G. Harris, London Hospital; R. A. Hickley, St. Mary's Hospital; A. R. Hill and O. S. Hillman, Middlesex Hospital; C. Holmes, Liverpool; R. E. Jenkins, London Hospital; E. F. J. Jones, Cardiff; R. M. Jones, Liverpool; F. W. Kemp, Charing Cross Hospital and King's College; N. H. Kettlewell, Bangor and Middlesex Hospital; W. Kilroe, Guy's Hospital; P. Lloyd Williams, St. Thomas's Hospital; L. Lyne, Guy's Hospital; J. J. M. MacDonnell and J. S. Moore, St. Thomas's Hospital; G. S. Morgan, Oxford and London Hospital; H. S. Morris, Guy's Hospital; W. R. Ranson, Middlesex Hospital; G. V. Richards Guy's Hospital; S. Robinson, Belfast; A. H. Shelswell and H. W. Southgate, Guy's Hospital; E. A. Sparks, St. Thomas's Hospital; J. Stephen, Manchester; A. C. Teuten, St. Mary's Hospital; C. de B. Thomson, Middlesex Hospital; and A. E. Young, Bristol.

*Physiology.*—W. M. Anthony, St. Thomas's Hospital; G. R. Aspinwall, Cambridge and Guy's Hospital; J. Brodetsky, London Hospital; E. S. Davies and J. Gorsky, King's Hospital; W. R. G. Harris, London Hospital; A. R. Hill and O. S. Hillman, Middlesex Hospital; C. Holmes, Liverpool; R. E. Jenkins, London Hospital; E. F. J. Jones Cardiff; F. W. Kemp, Charing Cross Hospital and King's College; J. S. Lewis, St. Mary's Hospital; P. Lloyd-Williams, St. Thomas's Hospital; L. Lyne, Guy's Hospital; J. J. M. MacDonnell and J. S. Moore, St. Thomas's Hospital; G. E. Morgan, Oxford and London Hospital; H. S. Morris, Guy's Hospital; W. R. Ranson, Middlesex Hospital; G. V. Richards, A. H. Shelswell, and H. W. Southgate, Guy's Hospital; E. A. Sparks, St. Thomas's Hospital; A. C. Teuten, St. Mary's Hospital; and A. E. Young, Bristol.

PRIMARY EXAMINATION, PART I.

*Biology.*—K. J. H. Davies, Guy's Hospital; and H. T. M. Price, Birmingham.

*Chemistry.*—K. J. H. Davies, Guy's Hospital.

*Materia Medica and Pharmacy.*—L. E. A. B Farr, Cambridge and King's College Hospital; and T. F. Reason, St. Mary's Hospital.

LONDON SCHOOL OF TROPICAL MEDICINE.—At the examination of this school at the termination of the fiftieth session (January-April, 1916) the following candidates were successful:—

W. N. Leak (distinction, highest marks, Duncan medal), H. Bayon (distinction), Miss V. G. Field, E. A. Blok, and J. A. Beels.

UNIVERSITY OF MANCHESTER.—The following has obtained the Diploma in Public Health: Harold Heathcote, M.B., Ch.B. Manch.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At examinations held recently the following candidates were successful:—

FIRST EXAMINATION.

Thomas Arnoldus du Toit, Robert Berry Forgan, William Harvie Kerr, Richard Francis Kerr, Lizzie Robertson Clark, Mayberry Hugh Carleton, Jung Bahadur Singh, and George Coote Field.

*Biology.*—Peter Edwin Malloch.

*Chemistry.*—John Murray and Andrew Wood Smith.

SECOND EXAMINATION.

Albert Ernest Hempleman, Reginald Edward Hopton, Arthur Stanley Hughes, Eduard Louis Attendorff, Rebecca Goodman, John Kohler Steel, and William Gibb.

*Anatomy.*—Hugh William Howatson.

*Physiology.*—Jacob Johannes van Niekirk, Gordon Spivey Woodhead, and James Foster Cook.

THIRD EXAMINATION.

Cecil Vale Samwell, Ernest Ebenezer Bronstorph, George Patrick de Silva, Henry Shaw, Andrew Inglis Meek, and Christopher Robert Cecil Moon.

*Pathology.*—Mahmoud Abdel Kader Mofreh, Eliza Jean Stuart, Patabendimuhandirange Martin Fernando, and Donald Stewart.

*Materia Medica.*—Daniel Cornelius Howard.

FINAL EXAMINATION.

Zachariah Albert Green, James Edward Ainsley, John Cardew Bedwell, Harold Cranwell Aloysius Haynes, Bertram Conrad Haller, James Byrne, James Virgil Reynolds Rohan, Salamon Julius Abrahams, James Blackburn, Charles Harris, Andrew Gaston, and Robert Christian Wilson Spence.

*Medicine.*—Stanley Wall Hoyland.

*Surgery.*—John Joseph Curtin.

*Midwifery.*—John Adami and John Joseph Curtin.

*Medical Jurisprudence.*—John Herbert Blackburn, Reginald Vincent Clarke, Charles George Book, William McElroy, and Maurice Andrew White.

UNIVERSITY OF GLASGOW.—At the Fourth (Final) Professional Examination for the Degree of M.B., Ch.B., the following candidates were successful:—

*William Dick Allan, John Alston, William Baird, Christina Blair Buchanan, Duncan Cameron, *Joseph Chalmers, Douglas Hamilton Coats, William Kerr Connell, Alexander Finlay Cook, Archibald Shankland Cook, Walter Gow Cook, John Norman Cruickshank, Andrew Davidson, Jane Beattie Davidson, *John Dunbar, James Brown Fisher, Matthew Mair Frew, Thomas Ronald Fulton, William Hamilton Gibson, Jessie Crawford Gilchrist, John Glaister, James Scott Kinross, †George Kirkhope, William Joseph Brown Lavery, Robert Linfay, M.A., Dorothy M'Cubbin, James Wallace Macfarlane, John MacInnes, Keith Stuart Macky, Duncan M'Laren, Elizabeth Stewart Martin, Frederick Robertson Martin, James M'Donald Matheson, William Watson Morrison, Alexander Morton, William O'Brien, James Alexander Paterson, Thomas Smith Paterson, James Herbert Paul, M.A., B.Sc., William James Poole, Thomas Joseph Desmond Quigley, James Richardson, Alexander Wilkie Ritchie, George William Ronaldson, *Mary Helen Routledge, Mary Isabel Sinclair, ‡Jane Stalker, William Mitchell Stewart, John Lawrence Torley, Robert Smellie Weir, *Clive Alan Whittingham, and *Marion Baillie Darling Wilson.

* Distinguished in Midwifery.

† Distinction in Surgery and Clinical Surgery.

‡ Distinction in Medicine and Clinical Medicine.

TYPHOID FEVER ALONG THE SHANNON.—During the past winter, as in several successive years, large stretches of country on either side of the Shannon have been flooded, and for several weeks the homesteads on the banks have been submerged in several feet of water and have been evacuated. On the return of the inhabitants to their homes this year an outbreak of typhoid occurred in the recently flooded areas near Athlone.

ROYAL COMMISSION ON UNIVERSITY EDUCATION IN WALES.—His Majesty the King has been pleased to approve the appointment of a Royal Commission on University Education in Wales. The terms of reference of the Commission are as follows: "To inquire into the organisation and work of the University of Wales and its three constituent colleges, and into the relations of the University to those colleges and to other institutions in Wales providing education of a post-secondary nature, and to consider in what respects the present organisation of university education in Wales can be improved, and what changes, if any, are desirable in the constitution, functions, and powers of the University and its three colleges." The following are the names of the persons appointed to serve on the Commission: The Right Hon. Viscount Haldane of Cloan, O.M., K.T., F.R.S., LL.D., chairman; Professor W. H. Bragg, F.R.S., M.A., D.Sc., Quain professor of physics in the University of London; the Hon. W. N. Bruce, C.B., a principal assistant secretary under the Board of Education; Sir Owen M. Edwards, M.A., Chief Inspector of the Welsh Department of the Board of Education; W. H. Hadow, M.A., D.Mus., Principal of Armstrong College, Newcastle; A. D. Hall, M.A., F.R.S., a Commissioner under the Development Act; Sir Henry Jones, M.A., LL.D., D.Litt., professor of moral philosophy in the University of Glasgow; Sir William Osler, Bart., F.R.S., M.D., D.Sc., LL.D., D.C.L., Regius professor of medicine in the University of Oxford; and Miss Emily Penrose, M.A., Principal of Somerville College, Oxford. The secretary to the commission is Mr. A. H. Kidd, of the Board of Education, to whom all communications should be addressed.

PETROL CONSUMPTION BY IRISH MEDICAL MEN.—An inquiry has been issued from the office of the Lord Lieutenant of Ireland to all medical men, who are asked to state on a form their consumption of motor spirit and the type of car or motor cycle used by them. After these returns have been collected it will be decided what amount of spirit each medical practitioner will be entitled to receive during war time.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

*The Local Government (Emergency Provisions) Bill.*

Two clauses in this Bill have special relation to medical men. One of these clauses, provisions as to the notification of diseases, reduces the fee payable to a practitioner for the notification of a case of infectious disease from half-a-crown to one shilling. When the Bill was in Committee in the House of Commons on Tuesday, Sir PHILIP MAGNUS moved an amendment to the effect that the fee should remain unchanged except in the case of measles. Mr. HAYES FISHER, the Parliamentary Secretary to the Local Government Board, resisted the amendment. The proposal to reduce the fee came from the Retrenchment Committee, and he was afraid that he could hold out no hope that the Local Government Board would forego the clause, at any rate for the period of the war. The amendment was negatived without a division and the clause was agreed to.

The text of the clause is in the following terms: "Notwithstanding anything in the Infectious Diseases (Notification) Act, 1889, or in any other Act, or in any Order of the Local Government Board, the following provisions shall have effect: (*a*) The fee to be paid to a medical practitioner for a certificate or notification sent by him to a medical officer of health in respect of a case of disease to which the Act or Order applies, occurring in his private practice, shall be one shilling and no more; (*b*) Every case of infectious disease occurring in any building, tent, van, shed, or similar structure in the occupation of any of His Majesty's forces, or of any person employed by or under the Admiralty, the Army Council, or the Minister of Munitions shall be notified to the medical officer of health of the district by the medical attendant if it would have been his duty to notify it if it had occurred elsewhere; and the local authority shall pay to the medical attendant (unless he is a medical officer or practitioner who holds a commission in any of His Majesty's forces or is employed by the Admiralty or Army Council and is prohibited from engaging in private practice) for the certificate or notification a fee of one shilling, whether the case occurs in his private practice or otherwise."

Another clause in the Bill has reference to the payments by county councils in respect of the salaries of medical officers. It runs:—"If a temporary substitute is appointed with the sanction of the Local Government Board to replace any medical officer of health or inspector of nuisances who has been granted leave of absence in accordance with the provisions of this Act to serve in or with His Majesty's forces, the county council shall be liable under paragraph (*c*) of subsection (2) of section twenty-four of the Local Government Act, 1888, to pay to the local authority one half of the sum actually paid by the local authority to the medical officer or inspector of nuisances so replaced or his wife or other dependants nominated by him under this Act, and of the salary of the temporary substitute as sanctioned by the Local Government Board, taken together."

The Bill has passed through Committee and been reported with amendments to the House.

## HOUSE OF COMMONS.

WEDNESDAY, APRIL 5TH.

*Royal Commission on Venereal Diseases.*

Mr. KING asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been drawn to the recommendations in the report of the Royal Commission on Venereal Diseases with respect to the examination of prisoners; whether it was his intention to carry them into effect in Ireland, and whether he would give an undertaking that no female prisoner or female person detained in a Borstal institution would be locally examined except by a woman doctor.—Mr. BIRRELL wrote in reply: So far as the General Prisons Board for Ireland is concerned no difficulty will be made in giving effect to the recommendation of the Royal Commission on Venereal Diseases that where the medical officer of a prison considers that an examination of a woman is necessary, it should only be made by a woman doctor. In the only prison that is wholly occupied by women prisoners in Ireland the medical officer is a woman.

THURSDAY, APRIL 6TH.

*Artificial Limbs for Soldiers and Sailors.*

Mr. FORSTER (Financial Secretary to the War Office) informed Mr. W. THORNE that artificial limbs were supplied in kind at Government expense to disabled soldiers and sailors, and the recipients were fully maintained in hospital at public expense while they were being fitted.

*The Health of Munition Workers.*

Replying to Major ASTOR, Dr. ADDISON, Parliamentary Secretary to the Ministry of Munitions, said: The girls and women at Messrs. Vickers's works at Erith, who have been recently changed from the three-shift to the two-shift system, were not medically examined prior to making this change. There is, however, a qualified medical man in residence close to the works who has been specially appointed to look after the health of all the firm's workers, and he has a surgery, first-aid station, and the assistance of a qualified nurse.

Major ASTOR asked the honourable gentleman how many controlled establishments where women were employed had changed from three 8-hour shifts to two 12-hour shifts since the recommendations of the Health of Munition Workers Committee recommending 8-hour shifts were published.—Dr. ADDISON answered: So far as I am aware only one establishment—namely, Messrs. Vickers, Limited, of Erith, have changed their system of shifts for their women employees from a three to a two-shift system since the issue of the Health of Munition Workers Committee's memorandum on the subject of hours of work. My honourable friend should understand that under the system introduced there work is confined to six days a week, and that the total working hours per week are from 58 to 60. One of the chief reasons which induced the Minister of Munitions to agree to this experiment, after a careful report by a leading Home Office inspector, was that the weekly rest time was increased from 16 continuous hours to 26 in each of the first two weeks, and from 24 to 48 in the third week.

Mr. ASHLEY: Surely 60 working hours a week are too much for girls to work even on munitions?—Dr. ADDISON: I agree, but that is within the limits of the Home Office regulations and the Munition Workers Committee's recommendations.

Mr. LEWIS HASLAM asked whether the recommendations of the Health of Munition Workers Committee with regard to ventilation and mechanical devices for ensuring workers against the inhalation of poisonous fumes, &c., were being carried out with the coöperation and under the guidance of the factory inspectors' department at the Home Office.—Dr. ADDISON said in reply: The precautions in question recommended by the Committee are, I understand, already being enforced by the inspectors of the factory department of the Home Office as a part of their general administration.

Dr. ADDISON, replying to a further question by Mr. HASLAM, stated that the exercise of compulsory powers to prevent the continuance of evils indicated in the reports of the Committee had not been hitherto found necessary, but if occasion arose the Minister of Munitions was prepared to take this course.

*The Navy Medical Service.*

Mr. ANEURIN WILLIAMS asked the Secretary to the Admiralty how many qualified medical men were now employed in connexion with the navy.—Mr. MACNAMARA wrote in reply: The number employed is 1118. This does

not include part-time medical men—namely, Admiralty surgeons and agents.

*Vaccination in the Army.*

Mr. TENNANT (Under Secretary for War) informed Mr. CHANCELLOR that no instructions for curtailment of leave to men in connexion with refusal of vaccination had been issued by the War Office.

*Sickness at Oswestry Camp.*

Sir F. CAWLEY asked the Under Secretary for War how many cases of sickness there had been at the Oswestry camp during the last six months; how many deaths had taken place either at the camp or from sickness contracted there; what was the total number of recruits in training at this camp; and what were the arrangements for dealing with cases of sickness, including medical staff and hospital accommodation.—Mr. TENNANT (in a written answer) replied: The average strength at the Oswestry camp during the last six months has been 9269. During that period there have been 1099 admissions to hospital and 27 deaths have taken place. The arrangements for dealing with cases of sickness and the scale of hospital accommodation are on the same scale as at other camps.

*The Motor-car Licence Duty.*

Mr. KING asked the Chancellor of the Exchequer to state, in connexion with the increased taxation on motor-cars, when it was proposed that this tax shall be payable; and whether it would be collected by and paid into the accounts of the local authorities.—Mr. MCKENNA replied: No alteration is proposed as regards the date on which motor-car licence duty is payable, but a supplementary licence for the remainder of the current calendar year will have to be taken out before June 30th or August 15th for cars, &c., which it is proposed to use after these dates. The new duties will, like the existing duties, be collected by the local authorities on behalf of the Exchequer.

Mr. D. M. MASON: Does the tax apply only to cars which are used?—Mr. MCKENNA: I should imagine the local authority would insist upon the surrender of the number of the car in order to prevent it being used.

Mr. WING: Does the answer of the right honourable gentleman apply to commercial cars?—Mr. MCKENNA: No.

MONDAY, APRIL 10TH.

*Non-poisonous Dopes.*

Replying to Mr. ROWLANDS, Mr. BRACE (Under Secretary for the Home Department) said: The Department are issuing all the non-poisonous dopes which they possess, and if they can possibly get a larger supply they will discontinue the poisonous. I can assure my honourable friend that we are doing everything we can in the matter.

*Motor-car Tax.*

Mr. MCKENNA (Chancellor of the Exchequer) informed Mr. ROWLANDS that he was considering whether exemption from the new duty could not be granted for motor-cars which were exclusively used for such purpose as the Red Cross, Special Constabulary, Voluntary Aid Detachment, and other voluntary work for the Government.

Sir FORTESCUE FLANNERY: Will the right honourable gentleman make a similar concession with regard to cars of registered medical practitioners necessary for carrying on their work?—Mr. MCKENNA: I should like to have notice of any question with regard to making concessions on the Budget.

*Territorial Medical Officers.*

Mr. LYNCH asked the Under Secretary for War whether he had heard of any discontent amongst Territorial medical officers, especially those attached to regiments; and whether he would consider the appointment of a Territorial medical officer of position and long service as such on the staff of the Director-General at the War Office and the insertion in the Army List of a seniority list of the officers of the Territorial medical service.—Mr. TENNANT wrote in reply: The Territorial regimental medical officers joined the service for the specific purpose of doing the duties in which they are now engaged and it is unlikely that they would be discontented if called upon in time of war to assume responsibilities for which they engaged in time of peace. Promotion of regimental medical officers is regulated by time service. Other Territorial Force medical officers are promoted by selection and seniority in their units. In these circumstances there is no need for a seniority list. The Director-General has on his staff an officer who has considerable experience of the Territorial Force.

Mr. LYNCH asked the right honourable gentleman whether a lieutenant-colonel of the Territorial medical service of many years' service received the same remuneration as a temporary lieutenant-colonel appointed since the commencement of the war; if so, whether this was in accordance with the spirit of the War Office undertaking that such officers should receive the pay of the corresponding rank as laid down by the Pay Warrant, 1914, for officers of the Royal Army Medical Corps; whether in the case of such officers their experience and their services were held to make them more valuable; and whether the higher rate of pay of 35s. laid down in the warrant for lieutenant-colonels of the Royal Army Medical Corps would be given them after five years' service in the ranks.—Mr. TENNANT (in a written answer) replied: Yes, sir, these officers are treated in accordance with the undertaking referred to. Unmobilised service in the Territorial Force cannot be held to count towards the higher rate of pay as if it were full-pay service in the Regular Army. If any Territorial Force lieutenant-colonels give the necessary amount of embodied service they will be entitled to the higher rate of pay.

WEDNESDAY, APRIL 12TH.

*Medical Men and Increased Motor Licences.*

Sir CLEMENT KINLOCH-COOKE asked the Chancellor of the Exchequer whether it was proposed to make any concession to medical men in respect of the increased licences on motors and motor cycles.—Mr. MCKENNA replied: The existing concession under which registered medical practitioners pay only half rates will extend to the new duties.

# Appointments.

*Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to* THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

LINDSAY, JOHN KERR, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed a District Medical Officer by the Bristol Board of Guardians.

TURNER, W., M.S. Lond., F.R.C.S. Eng., has been appointed Surgeon to In-patients at Westminster Hospital.

# Vacancies.

*For further information regarding each vacancy reference should be made to the advertisement (see Index).*
*When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.*

BATH, WINSLEY SANATORIUM.—Assistant Resident Medical Officer, unmarried. Salary £250 per annum, with board, residence, and laundry.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Resident Medical Officer for six months. Salary at rate of £100 per annum, with board, residence, and washing.

BRISTOL GENERAL HOSPITAL.—House Physician for six or three months. Salary at rate of £175 per annum, with board, residence, &c.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BROOK WAR HOSPITAL, Shooter's Hill, Woolwich.—Resident Medical Office. Salary £1 daily, with board and residence.

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, board, and washing.

BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, residence, and washing.

CAMBRIDGESHIRE ASYLUM, Fulbourn, near Cambridge.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, washing, and attendance.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, apartments, and laundry.

COBHAM, SURREY, SCHIFF HOME OF RECOVERY, Knowle Hill Park.—Resident Surgical Officer for six months. Salary at rate of £200 per annum, with board, lodging, and washing.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, residence, &c.

FEDERATED MALAY STATES.—Female Medical Officer. Salary £350 per annum.

GALWAY HOSPITAL.—Resident Medical Officer and Compounder of Medicine. Salary £100 per annum, with apartments and rations.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.—House Physician for three months. Salary at rate of £100 per annum, with board, residence, and laundry.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

LIVERPOOL, TOWNSHIP OF TOXTETH PARK POOR-LAW INSTITUTION AND INFIRMARY.—Assistant Resident Medical Officer. Salary £350 per annum, with board, washing, and apartments.

LIVERPOOL, URBAN DISTRICT COUNCIL OF WATERLOO-WITH-SEAFORTH.—Medical Officer of Health and School Medical Officer. Salary £130 and £100 per annum respectively.

LONDON HOSPITAL.—Two Vacancies on Assistant Obstetric Staff.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant House Surgeon for six months. Salary at rate of 120 guineas per annum.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, attendance, coal, and gas.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments and board.

MANCHESTER ROYAL INFIRMARY.—Resident Medical Officer and Resident Surgical Officer. Salary £225 per annum each. Also Assistant Resident Surgical Officer, Accident Room House Surgeon, and Resident Medical Officer (Central Branch). Salary £200 per annum in each case.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female Temporary Assistant Surgeon for six months.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Four Resident House Physicians, Four Resident House Surgeons, Resident Accident Room House Surgeon, Resident House Surgeon to Aural and Ophthalmic Department, Resident House Surgeon to Skin and Gynæcological Department, and Resident House Surgeon to Outpatient Dressing Department.

NORTHAMPTON GENERAL HOSPITAL.—Two House Surgeons. Salary £150 per annum each, with apartments, board, washing, and attendance.

PUTNEY HOSPITAL, Lower Common, S.W.—Resident Medical Officer. Salary £150 per annum, with rooms, board, and laundry.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeons for six months. Salary £100 per annum, with board, residence, and washing.

ROCHESTER, ST. BARTHOLOMEW'S HOSPITAL, Kent.—Senior Resident House Surgeon. Salary at rate of £300 per annum.

SALISBURY GENERAL INFIRMARY.—Assistant House Surgeon, unmarried. Salary £100 per annum, with board, lodging, and washing.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Female Junior House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board and residence.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon. Salary at rate of £200 per annum, with board and lodging.

WARWICKSHIRE AND COVENTRY JOINT COMMITTEE FOR TUBERCULOSIS.—Resident Medical Officer for Bramcote Sanatorium, near Nuneaton. Salary at rate of £250 per annum, with board, &c.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—House Physician.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—Female Assistant House Surgeon. Salary £100 per annum, with residence, board, and washing.

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**THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at St. Faith's, in the county of Norfolk.**

# Births, Marriages, and Deaths.

## BIRTHS.

COX.—On April 9th, at 8, Ellerdale-road, Hampstead, to Dr. and Mrs. R. J. H. Cox, C.M.S., Bannu, N.W.F.P., India, a daughter.

DYKES.—On March 28th, at the Nursing Home, College-avenue, Maidenhead, the wife of T. Campbell Dykes, L.D.S., Dental Surgeon, of a daughter.

REICHARDT.—On April 4th, at Dorset House, Ewell, Surrey, the wife of E. N. Reichardt, M.D. Lond., of a son.

WHEATON.—On April 9th, at Rastell-avenue, Streatham-hill, S.W., the wife of S. W. Wheaton, M.D. Lond., F.R.C.P. Lond., of a daughter.

## MARRIAGES.

DENHAM—BRIGGS.—On April 11th, at Trinity Presbyterian Church, Kensington, Captain Charles Holmes Denham, R.A.M.C., to Irene, youngest daughter of the late James Cronshaw Briggs, of The Firs, Cheadle, Cheshire.

HARTY—CLARK.—On April 8th, at All Saints Church, Notting-hill, John Percy Ingham Harty, M.B. Irel., F.R.C.S. Eng., Captain, R.A.M.C. (T.), to Helen Dorothy, second daughter of Mr. and Mrs. J. G. Clark, of Ladbroke-gardens, W.

JOHNSTONE—GRAHAME.—On April 4th, at St. Columba's, S.W., Thomas Johnstone, M.D. Edin., M.R.C.P. Lond., of Harrogate, to Agnes Mary Grahame, of Ripon, daughter of the late John Anthony Grahame, of Westminster and Sussex-gardens, W.

SMITH—ACKERLEY.—On April 6th, at St. Matthew's Church, Surbiton, Austin Nimmo Smith, Captain, R.A.M.C., to Muriel Alice, daughter of Dr. R. Ackerley, of Llandrindod Wells.

SMITH—MALLINSON.—On April 11th, at Walthamstow, Philip Smith, Captain, R.A.M.C., to Evangeline Dorothea, younger daughter of William Mallinson, J.P., of The Limes, Walthamstow.

## DEATHS.

BLADES.—On April 9th, at 182, Clapham-road, Charles Corbett Blades, M.D., in his 82nd year.

BRICE.—On April 5th, at Swansea, Major Ernest Brice, R.A.M.C., M.R.C.S., aged 52 years.

COLE.—On April 11th, of wounds received on March 22nd, Major A. H. Cole, F.R.C.S., aged 46 years.

PHELPS.—On April 8th, at Baxter-gate, Loughborough, Philip Phelps, M.R.C.S. Eng., F.R.C.P. Edin., L.M., aged 63 years.

POWELL.—On April 5th, H. FitzGerald Powell, M.D. St. And., F.R.C.S. Edin., Surgeon, Throat Hospital, Golden-square, W.

KILLED ON DUTY.

NICHOL.—On April 5th, accidentally killed while flying at night on the North-East Coast of England, John Nichol, aged 22, Lieutenant, Royal Scots Fusiliers, and Flying Officer, Royal Flying Corps, second son of Dr. and Mrs. Nichol, of Margate.

*N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Short Comments, and Answers to Correspondents.

## CHOLERA IN THE MALAY STATES.

REPORTS for the year 1914 on the States of Kedah, Perlis, Kelantan, and Trengganu have been laid before the Houses of Parliament. The territories in question are portions of the Malayan Peninsula not included in the Federated Malay States, but the rights of their protection, administration, and control were transferred by Siam to Great Britain by the Anglo-Siamese Treaty of March 10th, 1909. Kedah, which lies on the west coast of the Peninsula, and includes the Langkawi group of islands, has an area of 3800 square miles and an estimated population of 250,000. The capital is Alor Star, eight miles inland on the Kedah River, with a population of about 12,000. There are 38 British officials employed in the public works, survey, police, and medical departments. The acting British adviser to the Kedah Government is Mr. L. E. P. Wolferstan, whose report gives special attention to the outbreaks of cholera which have occurred in the State from 1907 to 1914. He quotes the following extracts as to these from a report made by Dr. A. L. Hoops: "First epidemic (August to September, 1907). The disease began after a long spell of dry weather in what is usually a wet season. 333 cases were recorded, and 247 deaths. Probably at least double the number of cases and deaths occurred. The epidemic did not spread much outside Alor Star and Kuala Kedah. Second epidemic (March and April, 1908). This was more widespread; 125 cases were reported from Kuala Muda district out of 686, with 541 deaths. Third epidemic (February to July, 1911). 1211 cases recorded with 966 deaths. Cases were better reported than formerly. It is calculated that at least 1500 deaths were caused by the disease. Alor Star and environs suffered severely. Most of North Kedah was attacked, and Langkawi Island suffered for the first time. Fourth epidemic. This really started in November, 1913, with 11 cases in Alor Star and Kuala Kedah. Unlike previous outbreaks, it began after an excellent wet season and before the rains ceased, but only became serious when drought set in. 2196 cases were recorded and 1502 deaths. Few places escaped; the disease spread to Kuala Muda, in South Kedah, and up stream to Baling. Undoubtedly there was a good deal of concealment, mainly in Kuala Muda and Baling districts. Though the deaths in these districts exceeded the deaths of the year before by 1051, only 325 were returned as due to cholera."

Mr. Wolferstan's report proceeds as follows:—"It is a conservative estimate that there have been 5500 deaths from cholera in Kedah in the past eight years out of a total of 37,000 from all causes—that is to say, cholera is responsible for nearly 15 per cent. over the whole period. In 1914 one-third of the deaths were due to cholera. The State surgeon says that he is convinced cholera has not been imported into Kedah, though some medical textbooks give it as a truism that cholera is an imported disease. None of the outbreaks in Kedah has been traced to an imported cause. Conditions in Alor Star favour the life of the cholera bacillus owing to the nature of the river and shallow well water, while the clay subsoil forms an ideal culture medium for its growth. Dr. A. J. Stanton, of the Medical Institute, Kuala Lumpur, visited Alor Star in April, 1914, and on his return to Kuala Lumpur made some interesting experiments with water drawn from the Wan Mat Canal, which is practically Alor Star river water. Emulsions of cholera bacilli from a Kedah case were added to samples of this water; it was found that even when the water was previously sterilised vibrios grew and multiplied rapidly in it. On the contrary, emulsions added to Kuala Lumpur tap-water (unsterilised) rapidly died out. Dr. Stanton concludes that Alor Star water itself contains ingredients favourable to the spread of cholera. He forms the hypothesis that there is within certain areas in Kedah a natural reservoir of virus, the renewed activity of which is derived from some special combination of circumstances. During the epidemic drinking of river water was forbidden; no bathing water was allowed to be carried to houses. Sikh guards were detailed to enforce restrictions. In 1911 an iron catchment area had been erected for collecting rain-water, with tanks holding 480,000 gallons of water. Drinking water was supplied from the tanks, and when this source failed 70 tons of drinking water were brought daily from Penang. Part was pumped into tanks at Kuala Kedah for use of surrounding villages. For the railway coolies special tanks were constructed and water boiled and supplied from them. An assistant surgeon and four dressers were sent by the Railway Department to assist.

Dr. J. H. Tennent, from the colony, was lent to help in combating the disease. The State surgeon himself fell a victim, and was laid up for a month. ..... At Christmastime cholera started in the Wong; this followed on a debauch on toddy amongst a number of Tamils; 21 cases in all occurred." The report goes on to record the completion of new waterworks, adding the comment: "That cholera will not break out in Alor Star again in the future can hardly be hoped, but, if the same success attends the provision of a good supply of water in Alor Star as was the case in Malacca some years ago, it may be hoped that the disease will never assume an epidemic form of considerable magnitude."

The report on the State of Perlis (area 300 square miles, population 32,740) mentions that cholera broke out in March, 1914; there were 45 cases, with 40 deaths. The outbreak came to an end in June. The infection came from Kedah. There appear to have been no corresponding outbreaks either in the State of Kelantan or the State of Trengganu.

The principal diseases, apart from cholera, prevalent in Kedah during the year were dysentery, ankylostomiasis, and malarial fever. In Perlis the chief ailments treated in the Government dispensary were malaria and skin diseases. In Kelantan the diseases mostly causing admission to hospital were dysentery (80), beri-beri (33), malaria (124), venereal diseases (172), and ankylostomiasis (40). Of 14,073 out-patients, 1115 Malays and 345 of other nationalities were treated for venereal diseases. Mr. C. N. Maxwell, the British Agent in Trengganu, observes in his report: "The Bundi Tin Mining Syndicate employ a qualified medical man on the mine in Ulu Kemaman. There is no other qualified doctor in the State (which has an area of 6000 square miles and a population of 154,037). There is a considerable amount of disease, and I am occasionally informed of deaths from cholera, small-pox, fever, and dysentery. A large number of people suffer from skin disease, and many of the children are disfigured with yaws and other eruptive complaints. Sanitation does not exist. Fortunately there were no serious epidemics during the year. I am occasionally asked for medicines, which I provide in simple cases. A matter to which I have drawn the Sultan's attention is the absence of any proper burial-grounds. Corpses are buried anywhere and everywhere, and Kuala Trengganu is one vast burial-ground with graves at every few yards."

## NOTIFICATION FEES AND THE CERTIFICATE QUESTION.

A CORRESPONDENT writes: "In the matter of opposing the proposed reduction in notification fees (from 2*s.* 6*d.* to 1*s.*), this is not a time for attacking the much-harassed medical profession. If we agree to this reduction, no doubt in a few years we shall be compelled, as in the case of notification of births, to give all certificates without any payment. I foresee the time when 2*s.* 6*d.* will be regarded as a munificent fee for a doctor in general practice. Our expenses are increasing by leaps and bounds, while our emoluments are one by one disappearing." We have not quite the same gloomy forebodings as the writer of this letter. That a medical man would give his services, to say nothing of a written record of them in the shape of a certificate, gratuitously was commonly assumed a few years ago. Our legislators now know a little better. During the war the medical practitioner is certainly bound to suffer, and the efforts of all must be directed towards equalising a general burden. The prospects of practice after the war seem to us brighter than they do to our correspondent.

## MR. H. G. WELLS AND DOCTORS.

*To the Editor of* THE LANCET.

SIR,—What is the matter with Mr. Wells? In the *Daily Mail* of April 8th he says the Government has refused the offer of Mr. Barker to treat injured men in the present war. May I point out that by S. 36 of the Medical Act, 1858, it is provided that "no person shall hold any appointment ..... in the Military or Naval Service ..... unless he is registered under this Act." Cannot Mr. Wells induce Mr. Barker to take a registrable medical diploma?

Mr. Wells next describes the medical profession as a "trade union." I wish he would make it a union! Many doctors now find how difficult it is to obtain a living, because so many *well-to-do* people obtain *free* treatment from Poor-law infirmaries, voluntary hospitals, municipal fever hospitals, sanatoria for consumptives, free vaccination, free school examination, and cheap panel doctors. Would any skilled craftsman have anything to do with schemes which supplied free labour to the public? Would they agree to work for the same wages on Sundays and on night work? Not likely. Would skilled union craftsmen agree to give their services at a few shillings a year on a panel system? Mr. Wells is in error in referring to the "atrocious incapacity of the general practitioner"—a term which, as a matter of fact, includes nine-tenths of all doctors. Let Mr. Wells help to improve the financial position of doctors by having them paid for their services to the public, and not by a payment of about 1*d.* a week, gross, as he agrees to pay panel doctors. If he agrees to start a medical trades union he will have my active help, and the practical gratitude of all doctors. I am, Sir, yours faithfully,

Liverpool, April 10th, 1916. ROBERT R. RENTOUL.

## RIDDING HOUSES OF INSECTS.

A RECENT issue of the *Scientific American Supplement* gives an ingenious method of clearing houses from summer swarms of small insects. Lighted lamps are placed in convenient places, and as the insects gather around the lights they are rapidly and effectively collected and disposed of by holding the nozzle of a vacuum cleaner near the lamp. Presumably the lamp referred to should be an incandescent electric bulb or a flame well protected by a glass chimney, otherwise the suction caused by the cleaner would possibly extinguish the flame.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

# Medical Diary for the ensuing Week.

## SOCIETIES.

**ROYAL MICROSCOPICAL SOCIETY**, 20, Hanover-square, W.

WEDNESDAY.—8 P.M., Prof. B. Moore: Early Stages in the Evolution of Life.—Mr. F. M. Duncan: Studies in Marine Biology.—Mr. J. W. Purkiss: Some Suggestions regarding Visual Efficiency in the Use of the Microscope and other Optical Instruments.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

**POST GRADUATE COLLEGE**, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

**NORTH-EAST LONDON POST-GRADUATE COLLEGE**, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

**THE THROAT HOSPITAL**, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

*For further particulars of the above Lectures, &c., see Advertisement Pages.*

## METEOROLOGICAL READINGS.

*(Taken daily at 8.30 a.m. by Steward's Instruments.)*

THE LANCET Office, April 12th, 1916.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rainfall. | Solar Radio in Vacuo. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| April 6 | 30·140 | N.E. | ... | 70 | 47 | 39 | 39 | 41 | Overcast |
| " 7 | 29·924 | N.E. | 0·27 | 66 | 48 | 36 | 38 | 39 | Cloudy |
| " 8 | 30·142 | N. | ... | 101 | 54 | 39 | 40 | 43 | Fine |
| " 9 | 30·100 | W. | ... | 105 | 56 | 41 | 42 | 46 | Cloudy |
| " 10 | 30·030 | N. | ... | 94 | 58 | 41 | 41 | 45 | Fine |
| " 11 | 29·738 | S.W. | 0·07 | 87 | 53 | 45 | 46 | 47 | Raining |
| " 12 | 29·690 | S.W. | 0·19 | 69 | 54 | 42 | 45 | 45 | Raining |

## Communications, Letters, &c., have been received from—

A.—Mr. R. J. Albery, Lond.; Messrs. Arnold and Sons, Lond.; Messrs. Armour and Co., Lond.; Dr. A. Ashkenny, Basingstoke; Messrs. R. Anderson and Co., Lond.; Dr. T. Cuming Askin, Woodbridge.

B.—Mr. David Balmer, Forfar; Miss Maude Bates, Worcester; Mrs. Bailey-Duncan, Edinburgh; Messrs. Alfred Bishop, Lond.; Messrs. Bennett Bros., Salisbury; Messrs. Butterworth and Co., Lond.; Mr. G. Barbazza, Milan; Dr. A. W. Brodribb, St. Leonards-on-Sea; Mr. J. Birt, Lond.; Dr. F. E. Batten, Lond.; Messrs. W. H. Bailey and Son, Lond.; Bovinine Co. of New York, Lond.; Messrs. Burroughs Wellcome and Co., Lond.; Deputy Inspector-General R. Gavin Brown, R.N., Lond.; Messrs. J. Bale, Sons, and Danielsson, Lond.; British Fire Prevention Committee, Lond.

C.—Miss Harriette Chick, Lond.; Dr. Frank Collins, Wanstead; Dr. F. G. Cawson, Maritzburg; Mr. Samuel Constable, Lond.; Chesterfield Hospital, Secretary of; Carbonora Co., Lond.; Messrs. Cassell and Co., Lond.; Mr. H. A. Collins, Croydon; City of London Lying-in Hospital, Secretary of; Children's Fresh Air Mission, Lond., Secretary of; Mr. O. C. Coker, Bigbury.

D.—Captain H. B. Dixon; Messrs. Dale, Reynolds, and Co., Lond.; Messrs. W. Dawson and Sons, Lond.; Dr. J. Duff, Chester; The "Duty and Discipline" Movement, Lond., Founder of; D. D. F.

E.—Messrs. Evans, Sons, Lescher, and Webb, Lond.; Mr. Finley Ellingwood, Chicago; Mr. L. A. Edwards, Lond.; Mr. D. A. Eadie, Edinburgh; Mr. C. W. Enslie, Lond.; Dr. W. d'Este Emery, Lond.; Eugenics Education Society, Lond.

F.—Dr. J. Graham Forbes, Lond.; Factories, Chief Inspector of, Lond.

G.—Mr. E. Griffiths, Torpoint; Galway County Hospital, Clerk to the; Guest Hospital, Dudley, Secretary of; Dr. S. R. Gloyne, Lond.; Mr. H. Ginn, Worcester; Dr. E. W. Goodall, Lond.; G. C.; Major E. W. Hey Groves, R.A.M.C.

H.—Major A. F. Hertz, R.A.M.C.; Messrs. Hirschfeld Bros., Lond.; Dr. E. Rivaz Hunt, Brighton; Hospital for Consumption, &c., Lond., Secretary of; Hatfield House, Drumcondra, Superintendent of; Home for Epileptics, Maghull, Secretaries of; Dr. A. B. Howitt, Lond.; Messrs. A. Heywood and Son, Lond.; Hoffmann-La Roche Chemical Works, Lond., Secretary of; Hunterian Society, Lond.; Harrogate Royal Baths, General Manager of.

I.—Incorporated Association of Certifying Factory Surgeons, Lond.

J.—Jessop Hospital for Women, Sheffield, Secretary of; Jeyes Sanitary Compounds Co., Lond.; Dr. Smith Ely Jelliffe, New York.

K.—Messrs. H. S. King and Co., Lond.; Dr. S. J. Kirk, Tofield, Alberta; Mrs. C. W. Kimmins, Chailey; Messrs. P. S. King and Son, Lond.; Messrs. D. J. Keymer and Co., Lond.

L.—Dr. E. Muirhead Little, Lond.; Local Government Board, Lond.; Messrs. Lever Bros., Port Sunlight; Major J. C. Holdich Leicester, I.M.S., Bombay.

M.—Mr. J. J. McNaboe, Lond.; Dr. J. C. McWalter, Dublin; Dr. Alastair Macgregor, Lond.; Mr. J. Y. W. MacAlister, Lond.; Mr. J. E. R. McDonagh, Lond.; Dr. G. A. McDonald, Wimbledon; Mr. Humphrey Milford, Lond.; Maltine Manufacturing Co., Lond.; Messrs. Mabie, Todd, and Bard, Lond.; Captain J. R. C. Mackintosh, R.A.M.C., France; Maison Boissat Evans, Lond.; Manchester Royal Infirmary, Secretary of; Dr. John Furse McMillan, Sandown; Messrs. J. Maclehose and Sons, Glasgow; Dr. James Metcalfe, Lond.; Manchester Northern Hospital, Secretary of; *Medical Review*, Lond., Manager of; Messrs. Macmillan and Co., Lond.; Messrs. May and Philpot, Lond.; Mr. A. S. Morley, Lond.; Mysore Government, Bangalore, Senior Surgeon to the.

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